

**2004 Chinook Selective Fishery,  
Marine Areas 5 and 6**

**By**

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## EXECUTIVE SUMMARY

During the summer of 2004, the second year of a pilot recreational Chinook salmon *Oncorhynchus tshawytscha* (“Chinook”) fishery that was limited to retention of marked (adipose clipped) hatchery Chinook salmon occurred in Marine Area 5 and the western portion of Marine Area 6 in Puget Sound. Objectives were: 1) increase meaningful recreational opportunity while meeting conservation goals for Puget Sound Chinook salmon defined by the Puget Sound Chinook Harvest Management Plan; and 2) collect information necessary to enable evaluation and planning of future potential Chinook mark-selective fisheries. Marine Areas 5 and 6 are located in Washington waters of the Strait of Juan de Fuca. The Chinook Selective Fishery was scheduled to begin on July 1, 2004 and continue through August 10 (41 days) or until a quota of 3,500 Chinook was kept, whichever occurred first. The fishery started on July 1, 2004 and ran continuously for 39 days through August 8.

We estimated that anglers made 29,425 trips during the Chinook Selective Fishery (July 1 – August 8). Those anglers kept an estimated 3,576 Chinook and 9,537 coho salmon *O. kisutch* (“coho”). Area 5 accounted for 86% of the effort (25,174 angler trips) and 81% of the Chinook kept (2,900) for a rate of 0.12 Chinook kept per angler trip. Area 6 accounted for 4,251 angler trips and 676 Chinook kept for a higher catch rate of 0.16 Chinook kept per angler trip. Based on creel surveys, Area 5 anglers released an estimated 12,392 Chinook, 25,800 coho, and 113 other or unidentified salmon. Area 6 anglers released an estimated 1,409 Chinook, 126 coho, and 3 other or unidentified salmon.

During the Chinook Selective Fishery (July 1-August 8), samplers fishing from the test boats landed 169 Chinook in Area 5 and 148 Chinook in Area 6. In Area 5, 92% of the Chinook encountered and landed by the test boat were caught using downriggers, even though they were only fished 69% of the time. In Area 6, all the Chinook encountered and landed by the test boat were caught using downriggers, even though they were only fished 78% of the time. Utilizing other gear types resulted in fewer encounters and fewer biological samples for both areas than would have occurred if the test boats had used downriggers exclusively as they did in 2003.

During the Chinook Selective Fishery time period, 44% of the legal-size fish caught by test boats were marked in Area 5 and 48% of the legal-size Chinook were marked in Area 6. The mark rate on sublegal-size Chinook was 36% (n=59) for Area 5, but only five sublegal-size Chinook were caught by the test boat in Area 6. Chinook caught on test boats were larger in Area 6 than in Area 5. The percent of legal-size chinook (22” or larger) was significantly different ( $X^2 = 49.8$ ,  $p < 0.0001$ ) between Area 6 (97%) and Area 5 (65%).

During the 2004 Chinook Selective Fishery only 35 Chinook were reported landed in Area 5 on Voluntary Trip Reports (VTR’s) turned in by anglers, while 112 Chinook were reported landed on VTR’s in Area 6. During the Chinook Selective Fishery time period, 40% of the legal-size Chinook were reported as marked in Area 6, which was lower than the mark rate from test fishing.

Twenty-nine double index coded wire tags were recovered in Areas 5 and 6 from July 1 through August 8. Based on the proportion of the catch that was sampled and the ratio of marked to

unmarked double index coded wire tagged Chinook for each hatchery, we estimated that anglers caught and released 95 legal-size, unmarked double index tagged Chinook, and that the additional mortality of unmarked legal-size double index tagged Chinook due to this selective fishery compared to a non-selective fishery was 10 fish.

Test boat catches consistently showed a higher mark rate than reported from the creel survey and the VTR's. We felt the mark rates from the test boats were the best estimate of the true mark rate. Using the total number of Chinook encounters from the creel survey (17,377) and apportioning into four categories of legal-size marked, legal-size unmarked, sublegal-size marked, and sublegal-size unmarked based on test fishing results, suggests that anglers released 1,834 legal-size and marked Chinook, or 34% of the fish they could have kept. We also estimated the number of encounters by assuming that anglers kept all Chinook that were legal-size and marked, and estimating the number of fish in the other three categories based upon the proportions they were caught in the test boats. Using this method, we estimated the total encounters at 11,481 Chinook. It appears unrealistic that anglers released one-third of the fish that were legal to keep, and it is also unrealistic that all legal fish were kept. The true number of encounters likely lies between the two estimates of encounters, i.e. between 11,481 and 17,377 Chinook.

Using the encounters from the creel survey (apportioned by category based on test fishing) and a release mortality rate of 15% for legal-size fish and 20% for sublegal-size fish, we estimated the total mortalities of Chinook in the selective fishery at 5,870, of which 1,676 were unmarked. Using the encounters estimated by assuming anglers kept all legal fish and a release mortality rate of 15% for legal-size fish and 20% for sublegal-size fish, we estimated total mortalities at 4,910 fish, of which 1,109 were unmarked fish.

Based on the estimated number of total encounters from the creel survey (the highest number) and apportioning them based on the test boat catch rates, we estimated the 2004 fishery encountered 7,498 unmarked legal-size Chinook and 1,738 unmarked sublegal-size Chinook. These estimates are below the predicted encounters of 7,993 unmarked legal-size Chinook and 4,935 unmarked sublegal-size Chinook as produced in the final pre-season run of the Fishery Regulation Assessment Model (FRAM).

Compliance with existing regulations, and the regulation prohibiting bringing unmarked salmon on board a vessel, was considered an integral part of a successful fishery. No citations or warnings were issued for retention of unmarked Chinook, nor were any warnings or citations issued for bringing an unmarked salmon on board a vessel.

In summary, the second year of the pilot marine Chinook selective fishery was successful with respect to the objective of increasing meaningful recreational opportunity within conservation constraints for Puget Sound Chinook. Anglers were allowed to fish for and retain Chinook for 39 days in Areas 5 and 6, compared with only 10 days and 5 days in Area 5 in 2001 and 2002, respectively. Angler effort in Area 5 was double the effort in 2002 during the same time frame. Using data from the test fishery sampling during the Chinook Selective Fishery, nearly half, or one in two, of the legal-size Chinook encountered were marked and could be retained by anglers.

The pilot fishery was also successful with respect to the objective of implementing monitoring and sampling programs to obtain management information for evaluation and planning of potential future selective Chinook fisheries. Estimated encounters were less than pre-season predictions. Compliance with fishing regulations was good during the fishery. The number of mortalities of unmarked double index coded wire tagged fish was negligible.

## INTRODUCTION

In recent years, abundant runs of hatchery salmon have been mixed with depressed runs of wild salmon in the Northwest in both marine and freshwater environments. Providing opportunities to harvest those abundant hatchery stocks while protecting wild stocks has been challenging. One tool for allowing harvest of abundant hatchery fish while limiting impacts on wild stocks is “Selective Fishing”. In recreational selective fisheries, anglers are generally allowed to retain fin clipped (“marked”) hatchery fish and are required to release unclipped (“unmarked”) fish. These unmarked fish are typically wild fish, but also include some unmarked hatchery fish. While selective coho salmon *Oncorhynchus kisutch* (“coho”) fisheries have occurred in Oregon, Washington, and British Columbia at various times since 1998, and selective Chinook salmon *O. tshawytscha* (“Chinook”) fisheries have occurred in freshwater areas since 2000, a selective Chinook fishery had not been conducted in marine waters prior to 2003.

During the summers of 2003 and 2004, a selective Chinook recreational fishery was implemented in waters of the Strait of Juan de Fuca with the objectives of: 1) increasing meaningful recreational opportunity while meeting conservation goals for Puget Sound Chinook salmon defined by the Puget Sound Chinook Harvest Management Plan; and 2) collecting information necessary to enable evaluation and planning of future potential Chinook mark-selective fisheries. The Northwest Treaty Tribes and the Washington Department of Fish and Wildlife (WDFW) reached agreement to consider selective Chinook sport fishing in this area for the 2003 and 2004 seasons as part of a pilot program. It was thought that a pilot fishery limited in time and area, as described below, would allow managers to evaluate the success of the fishery and the monitoring and sampling programs.

The 2004 Chinook Selective Fishery started on July 1, 2004 and ran continuously through August 8, 2004 in Marine Area 5 and the western portion of Marine Area 6. Marine Areas 5 and 6 (hereafter: Areas 5 and 6) are located in Washington waters of the Strait of Juan de Fuca, running from the Sekiu River easterly to Low Point, and from Low Point to approximately Whidbey Island, respectively (Figure 1). Chinook selective fishing in Area 6 was open only from Low Point easterly to Ediz Hook because the eastern portion of Area 6 has many more boat ramps and other access points, and would have required substantially more sampling effort to obtain precise estimates of harvest and effort. Additional closures to help achieve fishery objectives were established: 1) in the eastern half of Marine Area 4; 2) near the mouths of the Sekiu and Hoko rivers; 3) near the mouth of the Elwha River; and 4) in Port Angeles Harbor.

Anglers were allowed to retain two marked (adipose fin clipped) Chinook salmon  $\geq 22$ ” (56 cm) as part of their daily limit, and were required to immediately release, unharmed, any unmarked Chinook caught. Integral to the selective fishery was a new salmon handling regulation starting

in 2003 stating, “Any salmon to be released may not be brought on board a vessel.” This regulation was modified slightly and applied throughout Puget Sound in 2004, including Areas 5 and 6. The 2004 regulation stated “It is illegal to bring a wild salmon, or a species of salmon, aboard a vessel if it is unlawful to retain those salmon. “Aboard a vessel” was defined as “inside the gunwale”. During the Chinook Selective Fishery anglers were also allowed to retain pink *O. gorbuscha* (“pink”), sockeye *O. nerka*, and marked hatchery coho salmon.

The 2004 season was scheduled to run from July 1, 2004 through August 10, 2004 (41 days), or until a quota of 3,500 hatchery Chinook salmon was caught and retained by anglers. The fishery was closed by emergency regulation effective at 11:59 p.m., August 8, 2004 because the quota was reached.

A preliminary analysis of the 2003 Chinook Selective Fishery was completed and is reported by Thiesfeld and Hagen-Breaux (2004). This report focuses on methods and results from 2004.

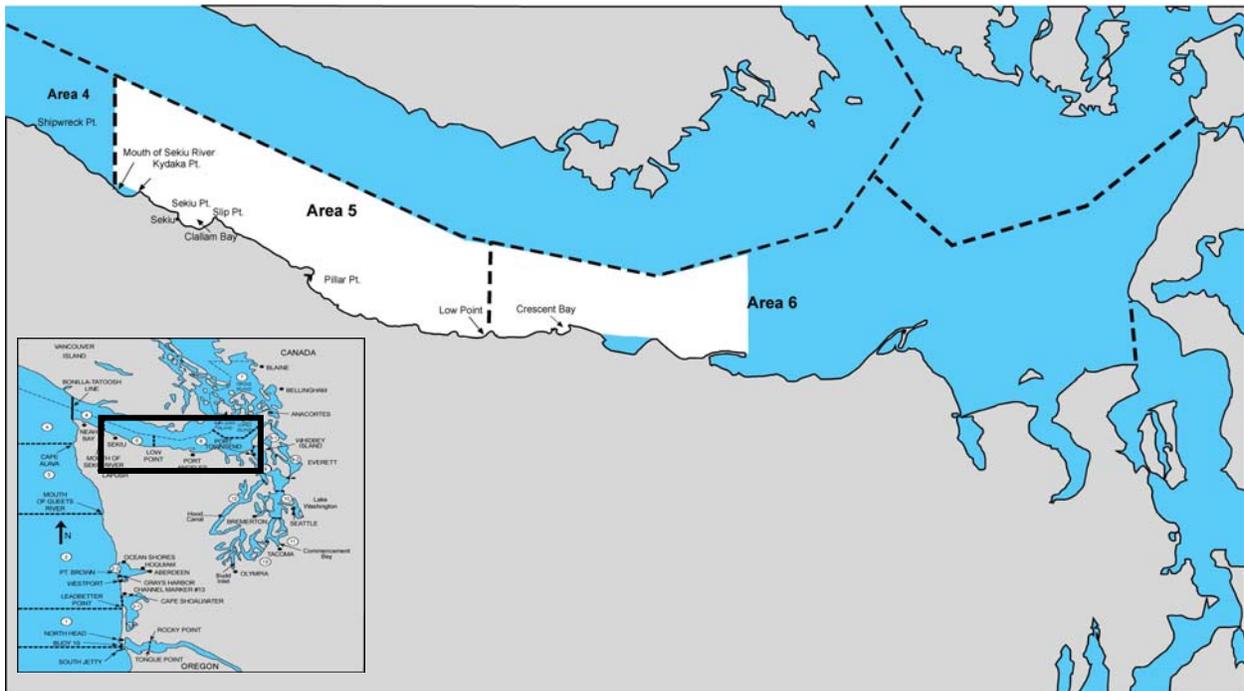


Figure 1. Location of the 2004 Chinook Selective Fishery (shown in white) in Marine Areas 5 and 6.

## METHODS

Methods in 2004 were similar to those in 2003; a detailed description of which is available in Thiesfeld and Hagen-Breaux (2004). We describe only changes to methods here, or methods that needed elaboration from those presented in the 2003 report.

### Access Site Size Determination

Between July 1 and August 8, five surveys were conducted by boat in Area 5, and seven surveys in Area 6, to determine the proportion of effort (or “size”) for each access site.

### Angler Interviews

Samplers collected scales and fork lengths measured to the nearest centimeter from randomly selected Chinook. Samplers collected scales and lengths from 404 Chinook in Area 5 and from 269 Chinook in Area 6. Fork lengths were converted to total lengths for analysis using the recommended equations presented in Conrad and Gutmann (1996). Because we measured fork length to the nearest centimeter and the minimum size of Chinook that anglers could retain was set in total length at exactly 22” (559 mm), and because of the variability associated with determining a conversion factor, some of the measured fish were actually legal-size if total length was measured, but were classified as sub-legal based on measuring fork length and then converting to total length. In addition, some anglers retained fish that were clearly sub-legal size. For this document, fish that were clearly sub-legal, and sub-legal size fish that may have been legal-size if total length was measured, were considered legal-size fish, but we footnoted the tables where a portion of the legal-size harvest was potentially sub-legal size.

Anglers on all boats were surveyed from a selected set of two docks or access points per area during a day; except that if some boats and anglers could not be surveyed, the boats were enumerated and harvest and effort data were expanded to account for the missed boats. During the Chinook Selective Fishery, only 39 boats were missed in Area 5 while 2,593 were interviewed, and one boat was missed in Area 6 while 1,024 were interviewed.

As time permitted, surveyors also randomly recorded the predominant (based on time) angling method used by the boat being interviewed according to the following categories: weight and bait (either mooching or trolling), downrigger trolling, trolling with divers, jigging, or other (e.g. fly fishing). After July 18, data was summarized only for those boats that actually encountered Chinook. Test fishing boats used results of the angling method survey in order to more accurately represent the fishery (see Test Fishing).

### Test Fishing

One test boat fished out of Sekiu (Area 5) from July 1 through September 26, and one boat fished out of Port Angeles (Area 6) from July 1 through August 8. Both the Sekiu boat and the Port Angeles boat fished 38 of the 39 open days during the Chinook Selective Fishery.

Samplers attempted to capture Chinook from July 1 through August 8 through their choice of area to fish, depth, gear type and fishing methods. Samplers attempted to fish with gear types in the same proportion of time as anglers were fishing that gear based on the angler interviews (see Angler Interviews).

We used a simple season long average to estimate mark rates of legal-size and sub-legal size fish. We calculated a rate weighted by weekly catch to determine the proportion of fish that

were legal-size and marked, legal-size and unmarked, sublegal-size and marked, and sublegal-size and unmarked.

### Voluntary Trip Reports

We used a simple season long average to estimate mark rates of legal-size and sub-legal size fish. We calculated a rate weighted by weekly catch to determine the proportion of fish that were legal-size and marked, legal-size and unmarked, sublegal-size and marked, and sublegal-size and unmarked.

### Coded Wire Tag Impacts

To determine the number of additional mortalities of unmarked double index coded wire tagged Chinook resulting from the selective fishery, we analyzed recovered coded wire tags and separated out tags from double index groups. We then utilized the methods described by WDFW (2002) to estimate the number of unmarked Chinook with double index tags that would have been encountered, and applied a 10% selective fishing mortality rate to estimate the number of mortalities. We used 10% instead of 15% because drop off mortality would occur to both marked and unmarked fish equally. Because the fishery sampling rate changed throughout the fishery and among areas, we estimated encounters and mortalities for each recovered double index tag individually, and then summed the estimated mortalities for each hatchery and brood year. Variance was also estimated with methods described by WDFW (2002), and was estimated for individual tags, then summed for each hatchery and brood year.

The estimate of unmarked mortalities was calculated by:

$$\hat{U}_a^{MSF} = \lambda^{REL} \hat{M}_a^{MSF} sfm$$

with associated variance:

$$Var(\hat{U}_a^{MSF}) \approx (\lambda^{REL})^2 sfm^2 \hat{M}_a^{MSF} \frac{1-s}{s}.$$

where:

$sfm$  = selective fishing mortality rate,

$U_{a,i}^{MSF}$  = aged  $a$  unmarked but tagged mortalities from stock  $i$  in the mark-selective fishery,

$M_{a,i}^{MSF}$  = aged  $a$  marked and tagged mortalities from stock  $i$  in the mark-selective fishery,

$s$  = sampling rate of the catch,

$\lambda^{REL}$  = unmarked to marked ratio at release for fish in a DIT group, and

$V(U)$  = variance of estimator  $U$ .

## Total Encounters and Mortalities

We calculated total encounters and mortalities two ways. These two estimates result in a range of encounters and mortalities. First, total encounters from the creel survey were apportioned into four categories (legal-size and marked, legal-size and unmarked, sublegal-size and marked, and sublegal-size and unmarked) based on the weighted rates each of those categories of fish were captured by test boats. For example, if 20% of the Chinook caught by the test boat in Area 5 were legal-size and unmarked, then we estimated that 20% of the Chinook encountered in Area 5 were legal-size and unmarked. We then subtracted the known harvest of each category to estimate the number of releases by category. Release mortality rates of 15% and 20% were applied to legal and sublegal releases, respectively, to estimate the number of released fish that died. We then summed the estimated harvest and estimated release mortalities for a total estimated mortality for each Area. Variance was calculated as:

$$V(TM_{ijk}) = (1 - sfm_i)^2 * V(C_{ijk}) + (E_k^2 * V(TFP_{ijk}) + V(E_k) * TFP_{ijk}^2) * sfm_i^2$$

where:

$Tm_{ijk}$  = Total mortality in size group  $i$  (legal or sublegal), mark status  $j$  (marked or unmarked) and area  $k$  (5 or 6),

$sfm_i$  = selective fishing mortality rate in size group  $i$  (legal or sublegal),

$V(C_{ijk})$  = variance of retained catch in size group  $i$ , mark status  $j$ , and area  $k$ ,

$C_{ijk}$  = retained catch in size group  $a$ , mark status  $b$ , and area  $i$ ,

$E_k$  = total encounters in area  $k$ ,

$V(TFP_{abi})$  = variance of the proportion of test boat catch in size group  $i$ , mark status  $j$ , and area  $k$ ,

$V(E_k)$  = variance of total encounters in area  $k$ , and

$TFP_{ijk}$  = proportion of test boat catch in size group  $i$ , mark status  $j$ , and area  $k$ ,

Secondly, we estimated the total encounters by assuming that anglers kept all legal-size marked Chinook, and divided the number of legal-size marked fish kept by the proportion of the test boat catches those fish represented for each area. The total encounters were then apportioned into the same four categories used in the previous method based on the proportion of the test boat catches each category represented.

## **RESULTS AND DISCUSSION**

### Effort and Catch

We estimated that anglers made 29,425 trips during the Chinook Selective Fishery (July 1 – August 8, statistical weeks 27 - 32; see Appendix A for dates associated with statistical weeks). Those anglers kept an estimated 3,576 Chinook 9,537 coho and 33 pink (Table 1). Area 5 accounted for 86% of the effort (25,174 angler trips) and 81% of the Chinook kept (2,900) for a rate of 0.12 Chinook kept per angler trip. Area 6 accounted for 4,251 angler trips and 676 Chinook kept for a higher catch rate of 0.16 Chinook kept per angler trip. Based on interviews, Area 5 anglers released an estimated 12,392 Chinook, 25,800 coho, 37 pink, and 113 other or

unidentified salmon. Also based on interviews, Area 6 anglers released an estimated 1,409 Chinook, 126 coho, 3 pink, and 3 other or unidentified salmon. The total of 25,174 angler trips in Area 5 was more than double the effort observed during a similar period in 2002. From July 1 through August 9, 2002, anglers made 11,883 trips in Area 5 to catch 1,792 Chinook.

Effort was initially high in Area 5, declined during the third week of the season, and then rose modestly during the last week of the Chinook Selective Fishery (Figure 2). In Area 6, there was no real trend to effort (Figure 3). Chinook harvest essentially declined throughout the fishery in Area 5, except for a slight increase during the last week of July (Figure 4). As with effort, there wasn't much of a trend for harvest in Area 6, except that harvest was generally higher during the last half of the season versus the first half (Figure 5). The number of Chinook kept per angler in Area 5 was fairly consistent during the fishery (Figure 6). The number of Chinook kept per angler was initially high in Area 6, but declined dramatically during mid-July, before rebounding during the last half of the season (Figure 7).

A total of 3,576 Chinook were kept during the Chinook Selective Fishery. Of this total, 3,571 were marked and 5 were unmarked (Table 2). Based on angler interviews, a total of 13,802 Chinook were released during the fishery based on angler interviews and the appropriate expansions. We estimated that anglers encountered 15,292 Chinook in Area 5 and 2,085 in Area 6, for a total of 17,377 encounters. Angler interview data suggested that only 24% of the fish were marked in Area 5 and only 33% were marked in Area 6. Nearly 90% of the unmarked Chinook caught and released by anglers were caught in Area 5 (Table 3). Weekly sampling data and estimates are presented in Appendix Tables B, C, D and E.

Table 1. Recreational salmon catch estimate during the Chinook Selective Fishery in Marine Areas 5 and 6, July 1 through August 8, 2004. The released numbers are based on angler interviews. Values may not add exactly due to rounding error.

Fishery	Trips		Harvested			Released			
	Boats	Anglers	Chinook	Coho	Pink	Unidentified or Other	Chinook	Coho	Pink
Area 5	10,709	25,174	2,900	9,459	30	113	12,392	25,800	37
Area 6	2,251	4,251	676	78	3	3	1,409	126	3
Total	12,960	29,425	3,576	9,537	33	116	13,802	25,926	40

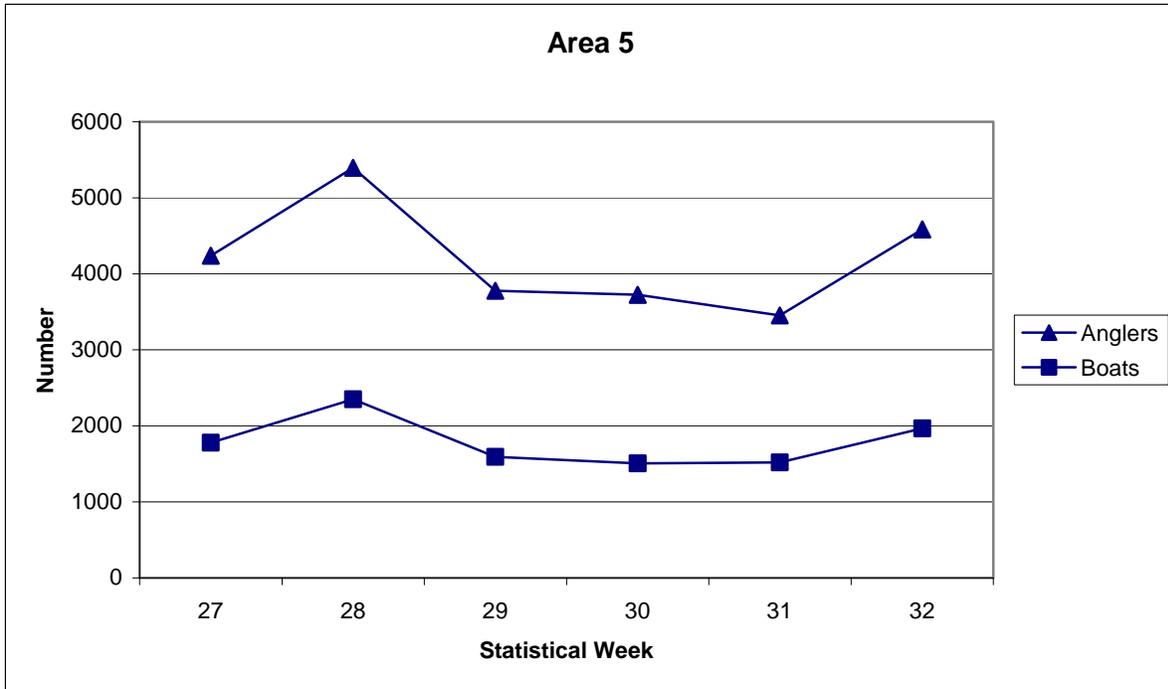


Figure 2. Weekly angler effort in Marine Area 5 for the 2004 Chinook Selective Fishery, July 1 through August 8, 2004. Note the first week includes only four days.

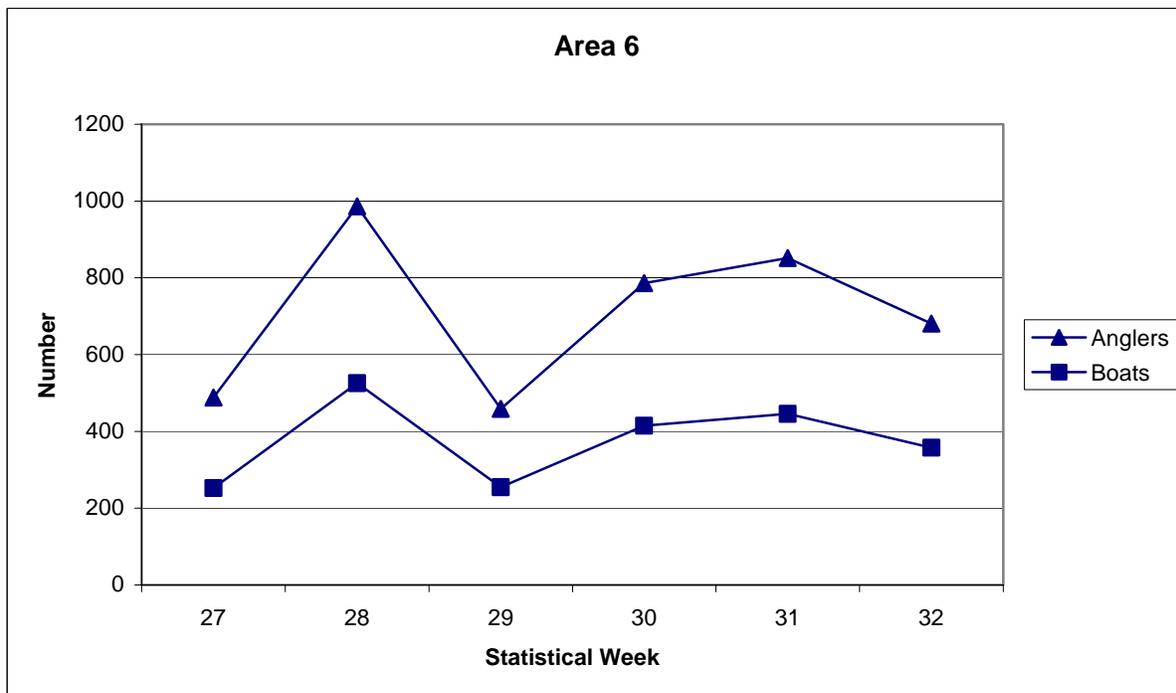


Figure 3. Angler effort in Marine Area 6, by week, for the 2004 Chinook Selective Fishery, July 1 through August 8, 2004. Note the first week includes only four days.

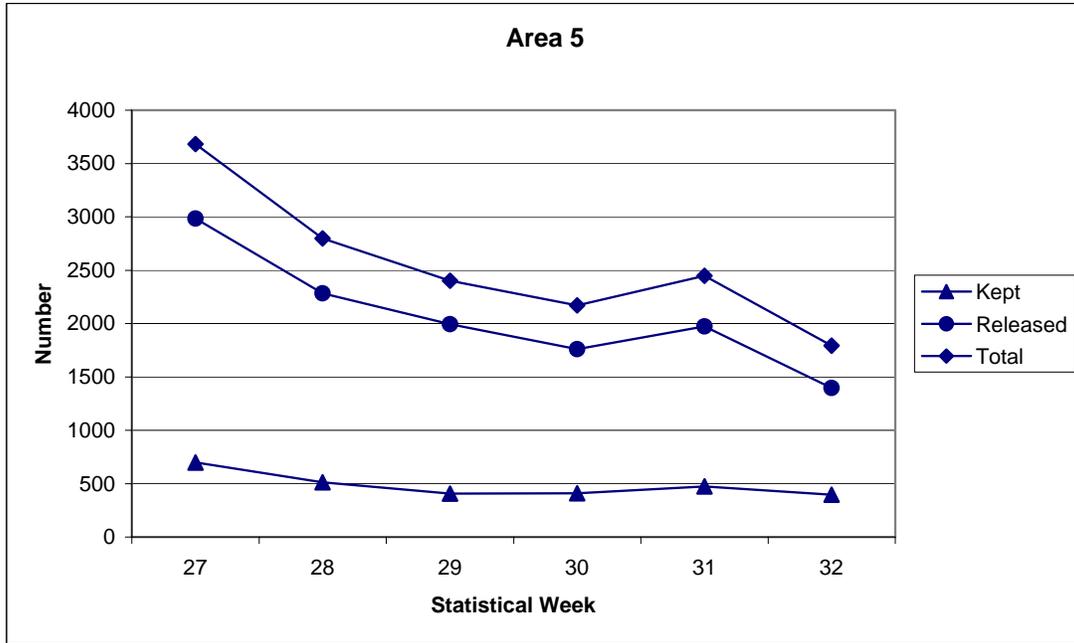


Figure 4. Catch of Chinook salmon from angler interviews in Marine Area 5, by week, for the 2004 Chinook Selective Fishery, July 1 through August 8, 2004. Note the first week includes only four days.

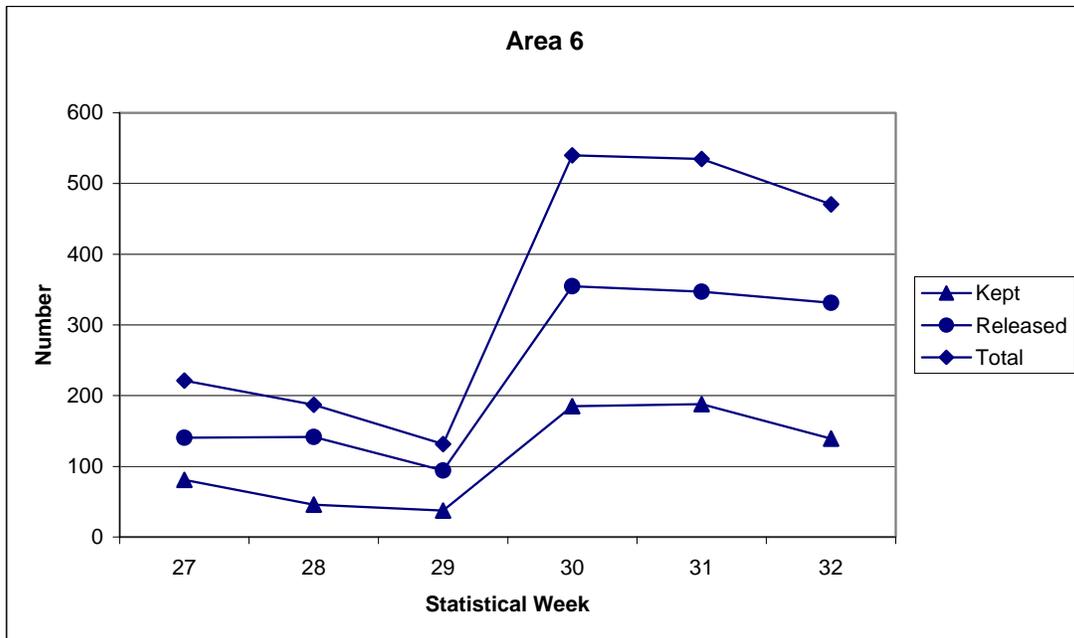


Figure 5. Catch of Chinook salmon from angler interviews in Marine Area 6, by week, for the 2004 Chinook Selective Fishery, July 1 through August 8, 2004. Note the first week includes only four days.

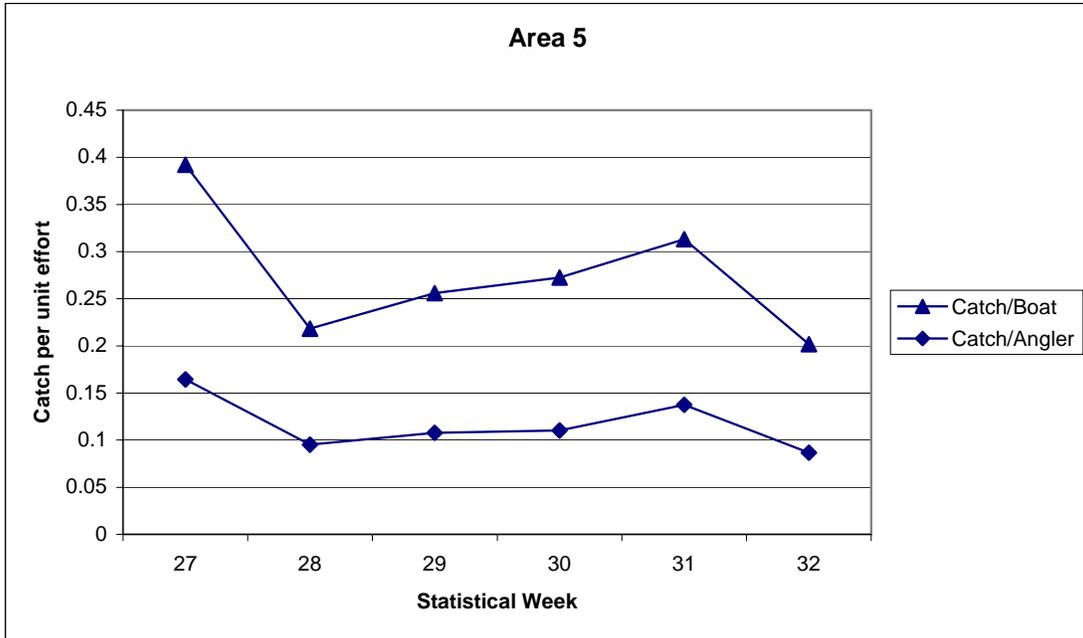


Figure 6. Catch per unit effort for kept Chinook salmon in Marine Area 5, by week, for the 2004 Chinook Selective Fishery, July 1 through August 8, 2004. Note the first week includes only four days.

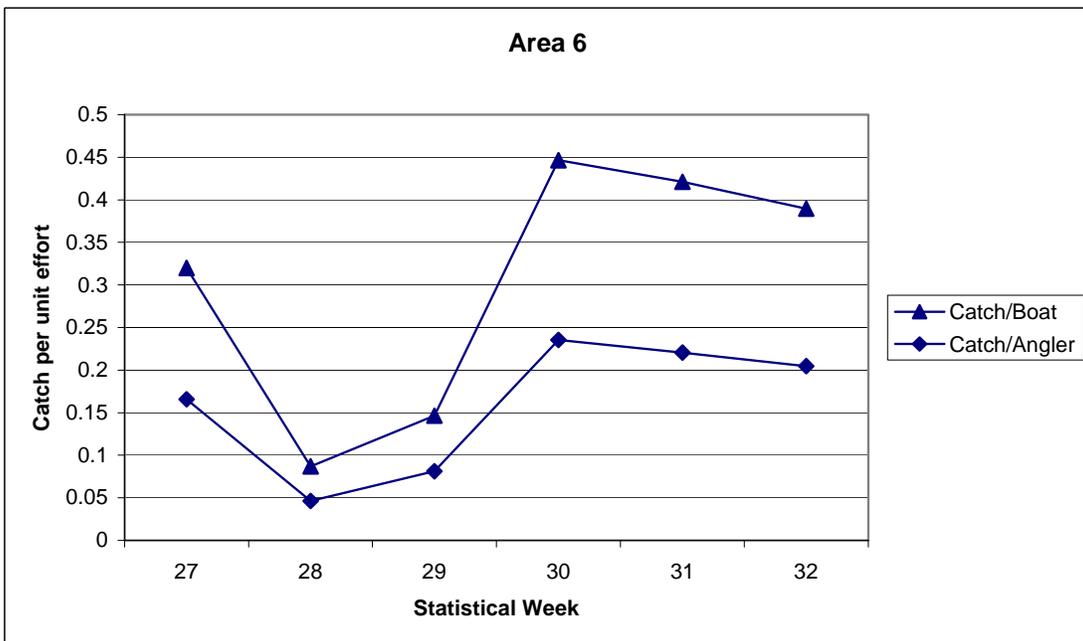


Figure 7. Catch per unit effort for kept Chinook salmon in Marine Area 6, by week, for the 2004 Chinook Selective Fishery, July 1 through August 8, 2004. Note the first week includes only four days.

Table 2. Estimates of Chinook kept and released, by mark status, during the Chinook Selective Fishery in Marine Areas 5 and 6, July 1 through August 8, 2004. Data are from creel surveys. Values may not add exactly due to rounding error.

	Total Kept	Marked Kept	Unmarked Kept	Total Released	Marked Released	Unmarked Released	Unknown Released	Total Encounters
Area 5	2,900 <sup>a</sup>	2,900	0	12,392	806	10,836	750	15,292
Area 6	676 <sup>b</sup>	671	5	1,409	23	1,337	50	2,085
Total	3,576			13,802				17,377

a. Includes up to 194 fish that may be sublegal-size and marked Chinook based on measurements during creel surveys.

b. Includes up to 3 fish that may be sublegal-size and marked Chinook based on measurements during creel surveys.

Table 3. Summary of creel survey estimates of marked and unmarked Chinook catch and variances (in parentheses) during the Chinook Selective Fishery in Marine Areas 5 and 6, July 1 through August 8, 2004. Values may not add exactly due to rounding error.

Area	Chinook Kept			Chinook Released			
	Marked	Unmarked	Total	Marked	Unmarked	Unknown	Total
5	2,900 <sup>a</sup> (51,584)	0 (0)	2,900 (51,584)	806 (18,105)	10,836 (728,746)	750 (31,297)	12,392 (778,148)
6	671 <sup>b</sup> (4,301)	5 (9)	676 (4,310)	23 (35)	1,337 (16,238)	50 (358)	1,409 (16,631)
5 and 6 Combined	3,571 (55,885)	5 (9)	3,576 (55,894)	829 (18,140)	12,173 (744,985)	800 (31,654)	13,802 (794,779)

a. Includes up to 194 fish that may be sublegal-size and marked Chinook based on measurements during creel surveys.

b. Includes up to 3 fish that may be sublegal-size and marked Chinook based on measurements during creel surveys.

## Test Fisheries

Test boats attempted to replicate the fishing methods used by anglers encountering Chinook by utilizing fishing methods in the same proportions reported by anglers. Weather and concentrations of spiny dogfish *Squalus acanthias* caused some adjustments to the projected schedule. However, samplers attempted to follow the schedule as best as possible. Downriggers were the most commonly used method by anglers in both areas, followed by bait (Table 4) and therefore were the most commonly used method by samplers fishing from the test boats (Table 5). Test boats fished bait less time than anglers did, and fished downriggers more often than anglers did. Bait was especially under-represented in Area 6 where dogfish concentrations were particularly troublesome.

During the Chinook Selective Fishery (July 1-August 8), samplers fishing from the test boats landed 169 Chinook in Area 5 (Table 6) and 148 Chinook in Area 6 (Table 7). In Area 5, 92% of the Chinook encountered and landed by the test boat were caught using downriggers, even though they were only fished 69% of the time. In Area 6, all the Chinook encountered and landed by the test boat were caught using downriggers, even though they were only fished 78% of the time. Utilizing other gear types resulted in fewer encounters and fewer biological samples for both areas than would have occurred if the test boats had used exclusively downriggers as they did in 2003.

During the Chinook Selective Fishery time period, 44% of the legal-size fish were marked in Area 5 and 48% of the legal-size Chinook were marked in Area 6 (Table 8). Based on these data, anglers could retain nearly one of every two legal-size Chinook they encountered during the fishery. The mark rate on sublegal Chinook was 36% ( $n = 59$ ) for Area 5, but only five sublegal Chinook were encountered in Area 6 (Table 8). With the exception of week 27, mark rates for legal-size Chinook were very similar in both areas from week to week during the Chinook Selective Fishery (Figure 8). The mark rate decreased in both areas after the first week of the fishery, and then doubled from mid-July to late July (statistical weeks 29 - 31), before declining during the last week of the season.

Chinook caught by test boats were larger in Area 6 than in Area 5 (Figures 9 and 10). The percent of fish that were legal size (22" or larger) was significantly different ( $X^2 = 49.8$ ,  $p < 0.0001$ ) between Area 6 (97%) and Area 5 (65%). The average size of fish in Area 5 was 67 cm with a minimum of 37 cm and a maximum of 109 cm ( $n = 169$ ), while the average size in Area 6 was 82 cm with a minimum of 49 cm and a maximum of 113 cm ( $n = 148$ ).

Table 4. Percent of time that anglers fished various methods during the Chinook Selective Fishery in Marine Areas 5 and 6, July 1 through August 8, 2004.

Dates	Area 5				Area 6				
	Weight and Bait	Down-rigger	Jig	Diver	Weight and Bait	Down-rigger	Jig	Diver	Other
July 1 – July 18	24	67	2	7	31	45	18	3	3
July 19 – August 8	32	62	2	3	25	53	21	1	0

Table 5. Percent of time that test boats fished various methods during the Chinook Selective Fishery in Marine Areas 5 and 6, July 1 through August 8, 2004.

Statistical Week	Area 5				Area 6			
	Weight and Bait	Down-rigger	Jig	Diver	Weight and Bait	Down-rigger	Jig	Diver
27	0	100	0	0	0	100	0	0
28	0	100	0	0	0	100	0	0
29	18	47	18	16	21	53	24	2
30	29	65	2	4	14	62	24	0
31	29	65	2	4	13	72	13	2
32	29	65	2	4	0	100	0	0
Weighted Average	21	69	5	5	9	78	12	1

Table 6. Catch data and calculations used to estimate weekly weighted mark rate and variance for Chinook salmon caught on test boats during the Chinook Selective Fishery in Marine Area 5, July 1 through August 8, 2004. Upper table shows the catch by week. Middle table shows the rates of marked and unmarked fish by week. Bottom table shows the weekly rate weighted (multiplied) by proportion of the total catch, and a season-long weighted mark rate (sum of the weekly data).

Size	Mark Status	Week						Total
		27	28	29	30	31	32	
Legal	Marked	5	6	3	10	17	7	48
	Unmarked	9	12	6	8	10	17	62
Sublegal	Marked	2	1	3	0	9	6	21
	Unmarked	0	2	8	5	18	5	38

Weekly Rates multiplied by Catch	Week					
	27	28	29	30	31	32
Legal Mark Rate	0.357	0.333	0.333	0.556	0.630	0.292
Sublegal Mark Rate	1.000	0.333	0.273	0.000	0.333	0.545
Combined Mark Rate	0.438	0.333	0.300	0.435	0.481	0.371
Proportion Legal and Marked	0.313	0.286	0.150	0.435	0.315	0.200
Proportion Legal and Unmarked	0.563	0.571	0.300	0.348	0.185	0.486
Proportion Sublegal and Marked	0.125	0.048	0.150	0.000	0.167	0.171
Proportion Sublegal and Unmarked	0.000	0.095	0.400	0.217	0.333	0.143

Category	Week						Season-long Weighted Rate	Standard Error
	27	28	29	30	31	32		
Proportion of Catch (from Creel)	0.240	0.177	0.141	0.142	0.164	0.137		
Legal Mark Rate	0.086	0.059	0.047	0.079	0.103	0.040	0.41	0.124
Sublegal Mark Rate	0.240	0.059	0.038	0.000	0.055	0.075	0.47	0.334
Combined Mark Rate	0.105	0.059	0.042	0.062	0.079	0.051	0.40	0.062
Proportion Legal and Marked	0.075	0.051	0.021	0.062	0.052	0.027	0.29	0.084
Proportion Legal and Unmarked	0.135	0.101	0.042	0.049	0.030	0.066	0.42	0.146
Proportion Sublegal and Marked	0.030	0.008	0.021	0.000	0.027	0.023	0.11	0.061
Proportion Sublegal and Unmarked	0.000	0.017	0.056	0.031	0.055	0.020	0.18	0.142

Table 7. Catch data and calculations used to estimate weekly weighted mark rate and variance for Chinook salmon caught on test boats during the Chinook Selective Fishery in Marine Area 6, July 1 through August 8, 2004. Upper table shows the catch by week. Middle table shows the rates of marked and unmarked fish by week. Bottom table shows the weekly rate weighted (multiplied) by proportion of the total catch, and a season-long weighted mark rate (sum of the weekly data).

Size	Mark Status	Week						Total
		27	28	29	30	31	32	
Legal	Marked	11	3	5	17	24	9	69
	Unmarked	4	10	10	16	13	21	74
Sublegal	Marked	0	0	0	0	2	2	4
	Unmarked	0	0	0	0	1	0	1

Weekly Rates	Week					
	27	28	29	30	31	32
Legal Mark Rate	0.733	0.231	0.333	0.515	0.649	0.300
Sublegal Mark Rate	--	--	--	--	0.667	1.000
Combined Mark Rate	0.733	0.231	0.333	0.515	0.649	0.344
Proportion Legal and Marked	0.733	0.231	0.333	0.515	0.600	0.281
Proportion Legal and Unmarked	0.267	0.769	0.667	0.485	0.325	0.656
Proportion Sublegal and Marked	0.000	0.000	0.000	0.000	0.050	0.063
Proportion Sublegal and Unmarked	0.000	0.000	0.000	0.000	0.025	0.000

Weekly Rates multiplied by Catch	Week						Season-long Weighted Rate	Standard Error
	27	28	29	30	31	32		
Proportion of Catch (from Creel)	0.120	0.068	0.055	0.274	0.278	0.206		
Legal Mark Rate	0.088	0.016	0.018	0.141	0.180	0.062	0.51	0.166
Sublegal Mark Rate	--	--	--	--	--	--	n/a	n/a
Combined Mark Rate	0.088	0.016	0.018	0.141	0.181	0.071	0.51	0.155
Proportion Legal and Marked	0.088	0.016	0.018	0.140	0.167	0.058	0.49	0.160
Proportion Legal and Unmarked	0.032	0.052	0.037	0.133	0.090	0.135	0.48	0.162
Proportion Sublegal and Marked	0.000	0.000	0.000	0.000	0.014	0.013	0.03	0.028
Proportion Sublegal and Unmarked	0.000	0.000	0.000	0.000	0.007	0.000	0.01	0.011

Table 8. Summary of the number of marked and unmarked, legal-size and sublegal-size Chinook salmon caught by test boats during the Chinook Selective Fishery in Marine Areas 5 and 6, July 1 through August 8, 2004.

	Legal-size			Sublegal-size			Total		
	Marked	Unmarked	%	Marked	Unmarked	%	Marked	Unmarked	%
Area 5	48	62	44	21	38	36	69	100	41
Area 6	69	74	48	4	1	80	73	75	49

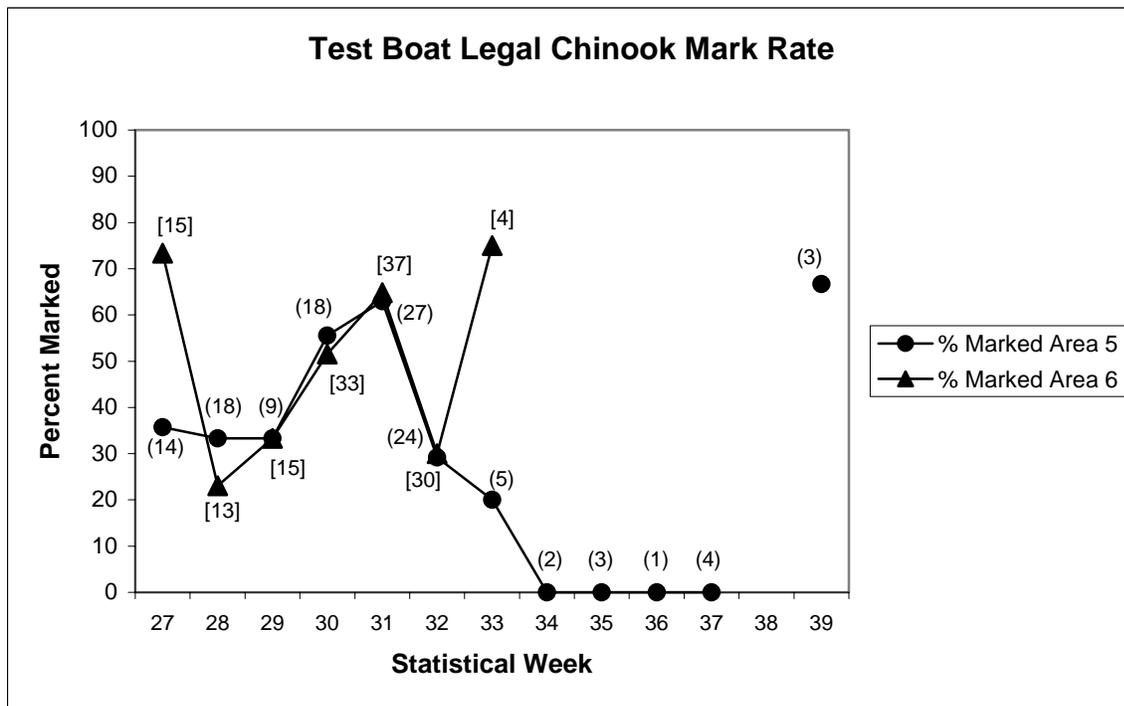


Figure 8. Mark rate (% adipose fin clipped) of legal-size Chinook caught by WDFW test boats in Marine Areas 5 and 6 during 2004. Sample sizes for Marine Area 5 are in ( ), while sample sizes for Marine Area 6 are in [ ]. The Chinook Selective Fishery occurred from July 1 through August 8, 2004 (statistical weeks 27 – 32). Note the first week includes only four days.

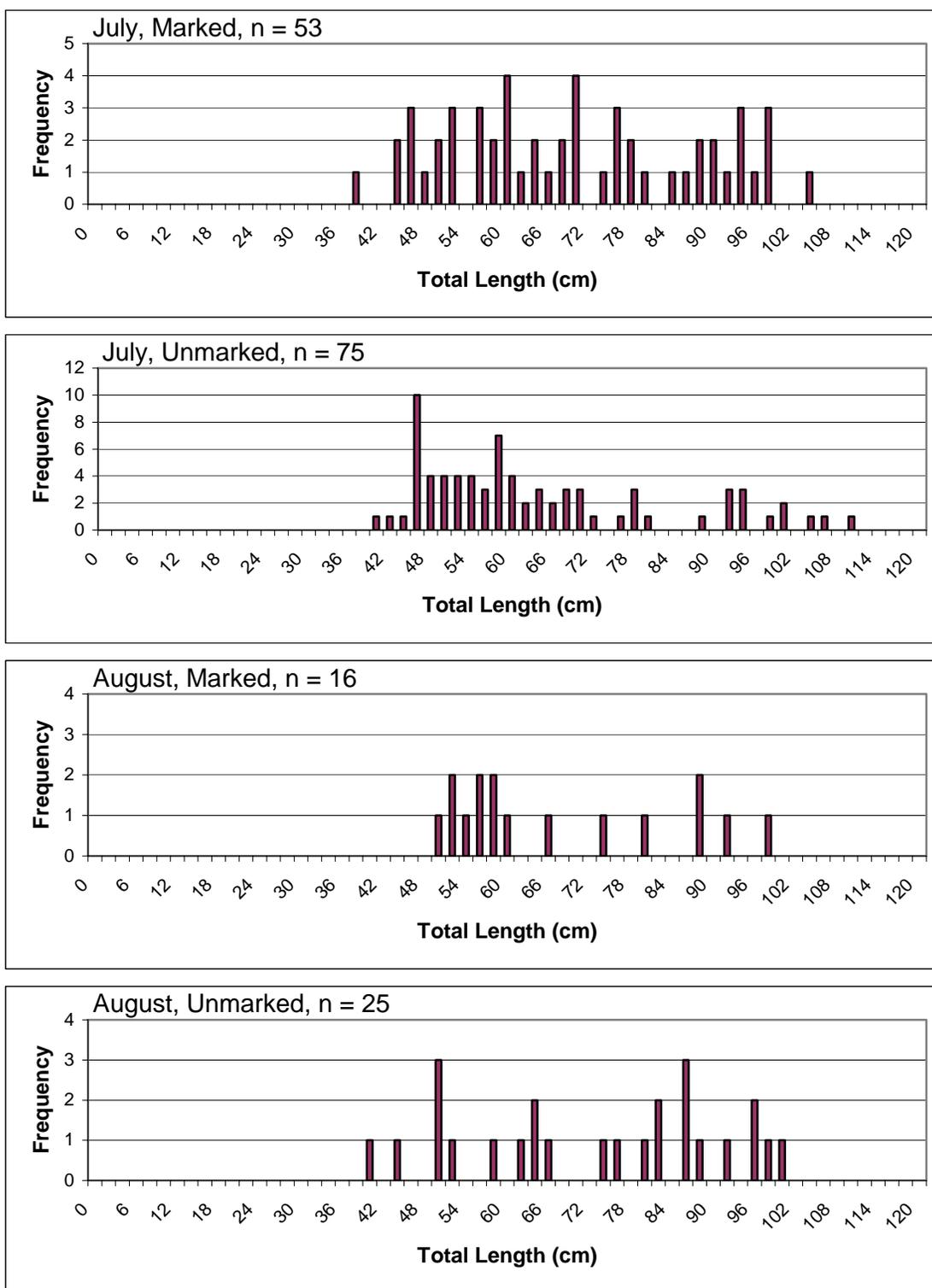


Figure 9. Length frequency histograms of Chinook salmon caught by test fishing boats sampling from July 1 through August 8, 2004, in Marine Area 5.

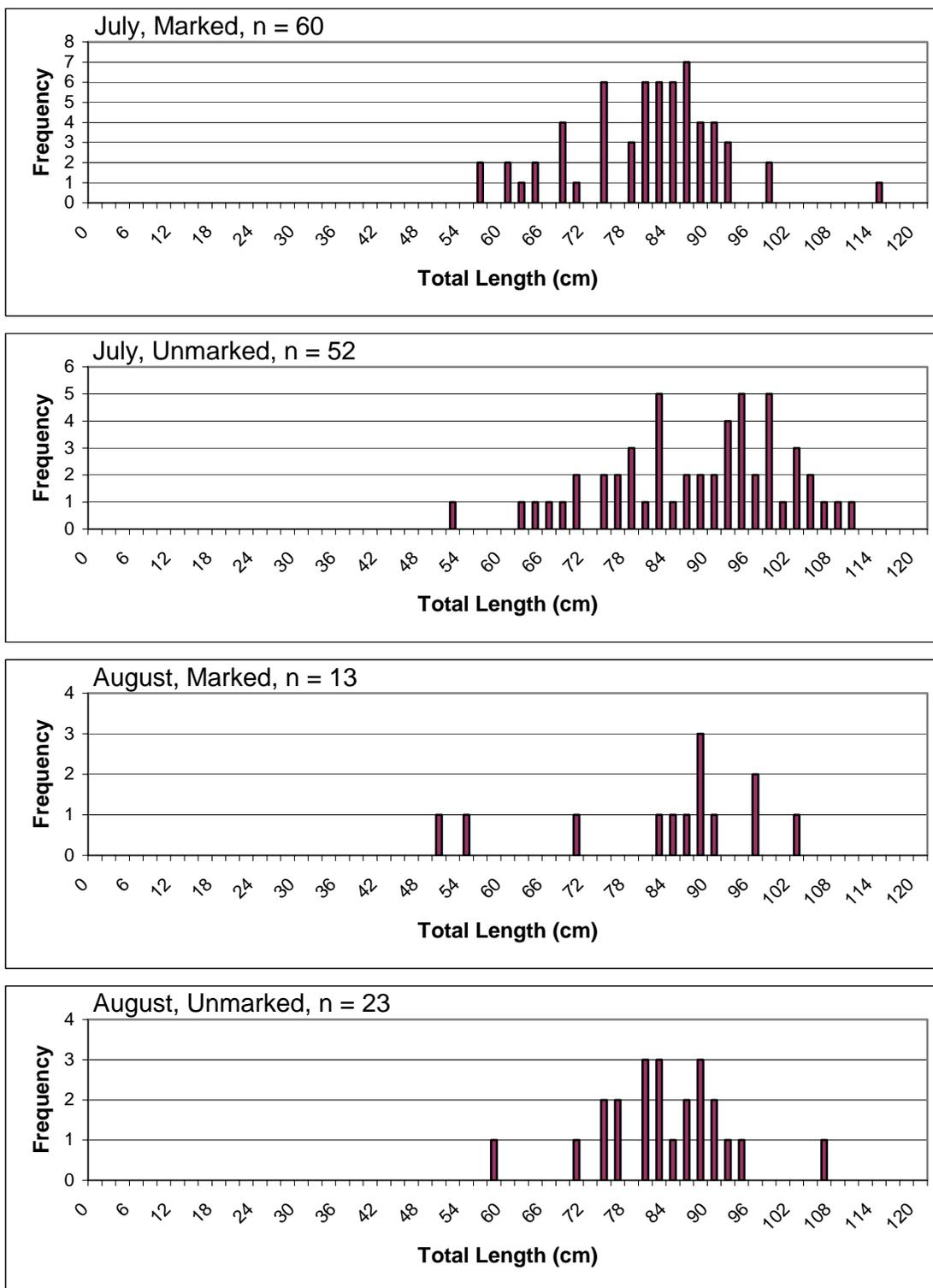


Figure 10. Length frequency histograms of Chinook salmon caught by test fishing boats sampling from July 1 through August 8, 2004, in Marine Area 6.

### Voluntary Trip Reports (VTR's)

During the 2004 Chinook Selective Fishery only 35 Chinook were reported landed on VTR's in Area 5 (Table 9), while 112 Chinook were reported landed on VTR's in Area 6 (Table 10). Based on the very small sample size in Area 5, 57% of the fish recorded on VTR's were legal-size in Area 5 and 20% of these were marked. In Area 6, 93% of the Chinook encountered were legal-size and 40% of these were marked (Tables 10 and 11). In Area 6, VTR's showed a lower mark rate for legal-size fish than the test fishery. Mark rates of legal-size Chinook were lower for the VTR's than the test boat in Area 5 during the first two weeks of July (Figure 11), but there was no clear pattern between the two in Area 6 (Figure 12).

### Coded Wire Tags

Samplers recovered 107 coded wire tags from harvested Chinook (Appendix F). Of these, 44 percent were Puget Sound stocks, 41 percent were Columbia River stocks, 11 percent were Canadian stocks, and the remainder from elsewhere. No tags were recovered from Strait of Juan de Fuca stocks in Washington. Twenty-nine double index coded wire tags were recovered in Areas 5 and 6 from July 1 through August 8 (Table 12). Fish from George Adams, Grovers Creek, and Chilliwack River hatcheries contributed the highest number of double index tags. We estimated that anglers caught and released 96 legal-size, unmarked double index tagged Chinook, and that the additional mortality of unmarked legal-size double index tagged Chinook due to a selective fishery compared to a non-selective fishery was 10 fish (Table 13).

### Encounters and Total Mortalities

We used two methods for estimating Chinook encountered in the fishery. The first method was based on applying the weighted test fishery proportions of marked and unmarked or legal and sublegal size Chinook to the sum of landed catch plus the creel interview reports of Chinook released. Test boat catches consistently showed a higher mark rate than both the creel survey and the VTR's. Anglers may have missed marks on released fish and also may have classified smaller legal-size fish as sublegal fish, especially since anglers were encouraged to reduce the handling of fish that they released. Each Chinook caught by test boats was measured and examined, minimizing the potential of missing marks or mis-classifying fish as legal-size or sublegal-size. Therefore, we felt the mark rates from the test boat were the best estimate of the true mark rate. Using the total number of Chinook encounters from the creel survey and apportioning into the four categories of legal-size marked, legal-size unmarked, sublegal-size marked, and sublegal-size marked from the test fishing data, suggests that anglers released 1,489 legal-size and marked Chinook in Area 5 and 345 legal-size and marked Chinook in Area 6 (Table 14) for a total of 1,834 released; or 34% of the fish they could have kept.

Table 9. Catch by week for Chinook salmon caught by anglers reporting their catch on Voluntary Trip Reports (VTR's) during the Chinook Selective Fishery in Marine Area 5, July 1 through August 8, 2004.

Size	Mark Status	Week					Total
		27	28	29	30	31	
Legal	Marked	3	1				4
	Unmarked	12	4				16
Sublegal	Marked	2	1				3
	Unmarked	6	6				12

Table 10. Catch data and calculations used to estimate weekly weighted mark rate and variance for Chinook salmon caught by anglers reporting their catch on Voluntary Trip Reports (VTR's) during the Chinook Selective Fishery in Marine Area 6, July 1 through August 8, 2004. Upper table shows the catch by week. Middle table shows the rates of marked and unmarked fish by week. Bottom table shows the weekly rate weighted (multiplied) by proportion of the total catch, and a season-long weighted mark rate (sum of the weekly data).

Size	Mark Status	Week						Total
		27	28	29	30	31	32	
Legal	Marked	1	4	8	11	15	3	42
	Unmarked	8	3	11	14	21	5	62
Sublegal	Marked	0	0	0	0	2	0	2
	Unmarked	0	1	0	0	4	1	6

Weekly Rates	Week					
	27	28	29	30	31	32
Legal Mark Rate	0.111	0.571	0.421	0.440	0.417	0.375
Sublegal Mark Rate	--	0.000	--	--	0.333	0.000
Combined Mark Rate	0.111	0.500	0.421	0.440	0.405	0.333
Proportion Legal and Marked	0.111	0.500	0.421	0.440	0.357	0.333
Proportion Legal and Unmarked	0.889	0.375	0.579	0.560	0.500	0.556
Proportion Sublegal and Marked	0.000	0.000	0.000	0.000	0.048	0.000
Proportion Sublegal and Unmarked	0.000	0.125	0.000	0.000	0.095	0.111

Weekly Rates multiplied by Catch	Week						Season-long Weighted Rate	Standard Error
	27	28	29	30	31	32		
Proportion of Catch (from Creel)	0.120	0.068	0.055	0.274	0.278	0.206		
Legal Mark Rate	0.013	0.039	0.023	0.120	0.116	0.077	0.389	0.112
Sublegal Mark Rate	--	--	--	--	--	--	na	n/a
Combined Mark Rate	0.013	0.034	0.023	0.120	0.112	0.069	0.372	0.106
Proportion Legal and Marked	0.013	0.034	0.023	0.120	0.099	0.069	0.359	0.104
Proportion Legal and Unmarked	0.106	0.025	0.032	0.153	0.139	0.115	0.570	0.127
Proportion Sublegal and Marked	0.000	0.000	0.000	0.000	0.013	0.000	0.013	0.021
Proportion Sublegal and Unmarked	0.000	0.008	0.000	0.000	0.026	0.023	0.058	0.053

Table 11. Summary of the number of marked and unmarked, legal-size and sublegal-size Chinook salmon caught by volunteers reporting their catch on Voluntary Trip Reports (VTR's) during the Chinook Selective Fishery in Marine Areas 5 and 6, July 1 through August 8, 2004.

	Legal-size			Sublegal-size			Total		
	Marked	Unmarked	%	Marked	Unmarked	%	Marked	Unmarked	%
Area 5	4	16	20	3	12	20	7	28	20
Area 6	42	62	40	2	6	25	44	68	39

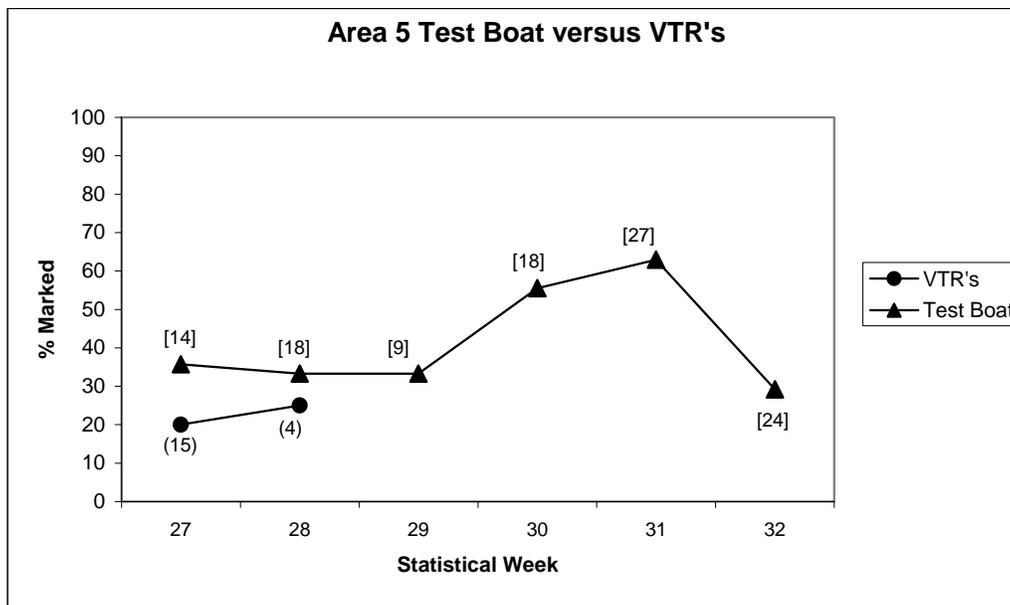


Figure 11. Mark rate (% adipose fin clipped) of legal-size Chinook salmon caught by WDFW test boats and anglers recording their catch on Voluntary Trip Reports (VTR's) in Marine Area 5 during 2004. Sample sizes for test boat are in ( ), while sample sizes for VTR's are in [ ]. The Chinook Selective Fishery was from July 1 through August 8. Note the first week includes only four days.

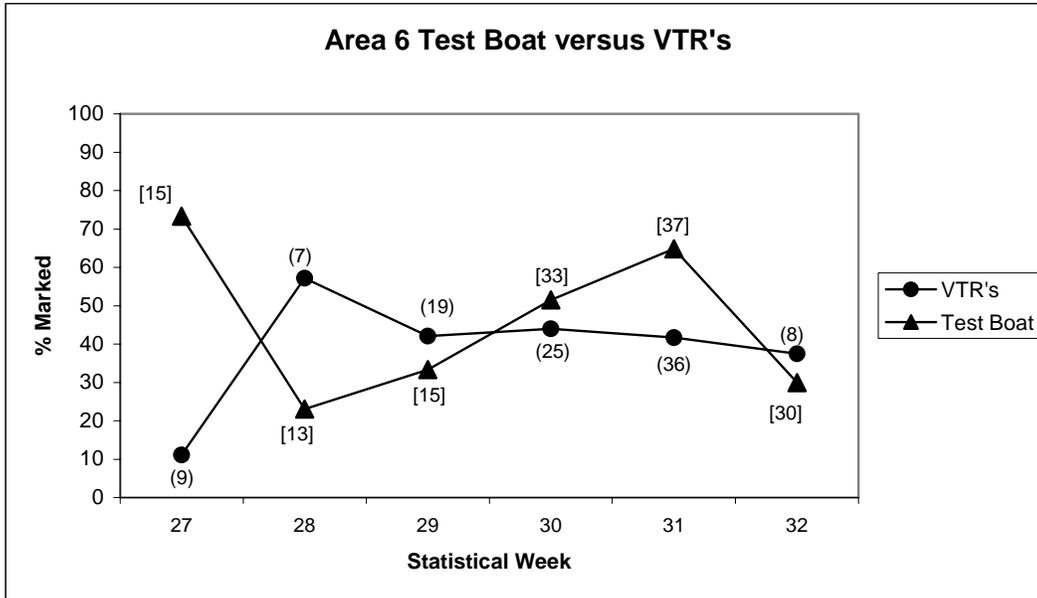


Figure 12. Mark rate (% adipose fin clipped) of legal-size Chinook salmon caught by WDFW test boats and anglers recording their catch on Voluntary Trip Reports (VTR's) in Marine Area 6 during 2004. Sample sizes for test boat are in ( ), while sample sizes for VTR's are in [ ]. The Chinook Selective Fishery was from July 1 through August 8. Note the first week includes only four days.

Table 12. Observed harvested Chinook salmon with Double Index Tag (DIT) coded wire tags during the 2004 Chinook Selective Fishery in Marine Areas 5 and 6, July 1 through August 8.

Area	Recovery Date	Tag Code	Brood Year	Rearing Hatchery	Release Site	Release Agency	Fork Length (CM)
5	July 24, 2004	184914	2001	H-CHILLIWACK R	R-CHILLIWACK R	CDFO	64
5	July 5, 2004	184916	2001	H-CHILLIWACK R	R-CHILLIWACK R	CDFO	63
5	July 6, 2004	184916	2001	H-CHILLIWACK R	R-CHILLIWACK R	CDFO	61
5	July 25, 2004	184916	2001	H-CHILLIWACK R	R-CHILLIWACK R	CDFO	76
5	July 17, 2004	185533	2002	H-CHILLIWACK R	R-CHILLIWACK R	CDFO	48
5	July 2, 2004	210279	2000	GROVERS CR HATCHERY	GROVERS CR HATCHERY	SUQ	71
5	July 10, 2004	210279	2000	GROVERS CR HATCHERY	GROVERS CR HATCHERY	SUQ	75
5	July 14, 2004	210279	2000	GROVERS CR HATCHERY	GROVERS CR HATCHERY	SUQ	61
6	July 17, 2004	210279	2000	GROVERS CR HATCHERY	GROVERS CR HATCHERY	SUQ	61
6	July 24, 2004	210279	2000	GROVERS CR HATCHERY	GROVERS CR HATCHERY	SUQ	83
5	August 1, 2004	210390	2001	GROVERS CR HATCHERY	GROVERS CR HATCHERY	SUQ	57
5	August 1, 2004	210390	2001	GROVERS CR HATCHERY	GROVERS CR HATCHERY	SUQ	59
6	July 3, 2004	630189	2000	NISQUALLY HATCHERY	CLEAR CR 11.0013C	NISQ	75
5	July 1, 2004	630668	2000	WALLACE R HATCHERY	WALLACE R 07.0940	WDFW	80
5	July 14, 2004	630669	2000	SOOS CREEK HATCHERY	BIG SOOS CR 09.0072	WDFW	78
6	July 3, 2004	630669	2000	SOOS CREEK HATCHERY	BIG SOOS CR 09.0072	WDFW	79
6	July 21, 2004	630669	2000	SOOS CREEK HATCHERY	BIG SOOS CR 09.0072	WDFW	65
6	July 23, 2004	630683	2000	GEORGE ADAMS HATCHRY	PURDY CR 16.0005	WDFW	75
6	July 14, 2004	630684	2000	GEORGE ADAMS HATCHRY	PURDY CR 16.0005	WDFW	86
6	July 29, 2004	630684	2000	GEORGE ADAMS HATCHRY	PURDY CR 16.0005	WDFW	81
5	July 10, 2004	630687	2000	NISQUALLY HATCHERY	CLEAR CR 11.0013C	NISQ	80
6	July 23, 2004	630687	2000	NISQUALLY HATCHERY	CLEAR CR 11.0013C	NISQ	65
6	July 27, 2004	630694	2000	MARBLEMOUNT HATCHERY	CASCADE R 03.1411	WDFW	76
5	July 4, 2004	636322	2001	GEORGE ADAMS HATCHRY	PURDY CR 16.0005	WDFW	63
5	July 10, 2004	636322	2001	GEORGE ADAMS HATCHRY	PURDY CR 16.0005	WDFW	61
5	July 17, 2004	636322	2001	GEORGE ADAMS HATCHRY	PURDY CR 16.0005	WDFW	69
5	July 20, 2004	636322	2001	GEORGE ADAMS HATCHRY	PURDY CR 16.0005	WDFW	56
5	July 25, 2004	636322	2001	GEORGE ADAMS HATCHRY	PURDY CR 16.0005	WDFW	45
6	July 3, 2004	636322	2001	GEORGE ADAMS HATCHRY	PURDY CR 16.0005	WDFW	65

Table 13. Observed number of double index tagged (DIT) Chinook kept by anglers, and the estimated mortality of unmarked double index tagged Chinook due to catch and release mortality, during the 2004 Chinook Selective Fishery in Marine Areas 5 and 6, July 5 through August 8.

Hatchery	Brood Year	DIT Tagged fish Observed	Estimated Harvest of Marked DIT fish	Variance of Estimated Harvest of Marked DIT Fish	Estimated Angler Releases of Unmarked DIT fish	Estimated Mortality of Unmarked DIT fish	Variance of Estimated Mortality of Unmarked DIT Fish	Standard Error of Estimated Mortality of Unmarked DIT Fish
George Adams	2000	3	7.14	10.02	7.21	0.72	0.10	0.32
George Adams	2001	6	22.62	70.03	21.22	2.12	0.62	0.79
Grovers Creek	2000	5	17.15	48.80	17.38	1.74	0.50	0.71
Grovers Creek	2001	2	7.48	20.49	7.50	0.75	0.21	0.45
Chilliwack	2001	4	15.00	41.80	14.71	1.47	0.40	0.63
Chilliwack	2002	1	3.84	10.93	3.83	0.38	0.11	0.33
Marblemount	2000	1	2.68	4.52	2.66	0.27	0.04	0.21
Nisqually	2000	2	5.53	10.55	5.46	0.55	0.10	0.32
Nisqually	2000	1	1.72	1.24	1.86	0.19	0.01	0.12
Soos Creek	2000	3	7.69	14.56	8.02	0.80	0.16	0.40
Wallace	2000	1	5.45	24.22	5.57	0.56	0.25	0.50
Total		29				9.54		

Table 14. Calculations used to estimate encounters and total mortality of Chinook salmon during the 2004 Chinook Selective Fishery in Marine Areas 5 and 6, July 1 through August 8. Uses the number of encounters obtained from dockside creel estimates, and apportions those encounters into categories of legal marked, legal unmarked, sublegal marked and sublegal unmarked according to the proportions those fish were caught by test fishing.

**Area 5**

Total Encounters (E) **15,292** (2,900 Retained + 12,392 Released from Creel Estimate)  
 V(E) 829,732

Test fishing proportions are used to split total encounters into legal marked/legal un-marked/sub-legal marked/sub-legal unmarked

	Test Fishery	V(TF)	Encounters	Retained <sup>a</sup>	V(Ret)	Mort Rate	Mortality	Released	sfm	Mortality	Total Mort	VAR	StErr	LCI	UCI	%SE
% legal marked	0.287	0.0070	4388.8	2900	51995	100%	2900	1489	15%	223	3123	76082	276	2583	3664	0.088
% legal Unmarked	0.425	0.0213	6499.1	0	0	100%	0	6499	15%	975	975	115691	340	308	1642	0.349
% sub-legal marked	0.110	0.0037	1682.1					1682	20%	336	336	35114	187	-31	704	0.557
% sub-legal unmarked	0.178	0.0201	2722.0					2722	20%	544	544	189268	435	-308	1397	0.799
<b>Total</b>			<b>15,292.0</b>				<b>2,900</b>	<b>12,392</b>		<b>2,079</b>	<b>4,979</b>					

**Area 6**

Total Encounters (E) **2,085** (676 Retained + 1,409 Released from Creel Estimate)  
 V(E) 20,941

Test fishing proportions are used to split total encounters into legal marked/legal un-marked/sub-legal marked/sub-legal unmarked

	Test Fishery	V(TF)	Encounters	Retained <sup>b</sup>	V(Ret)	Mort Rate	Mortality	Released	sfm	Mortality	Total Mort	VAR	StErr	LCI	UCI	%SE
% legal marked	0.487	0.0259	1016	671	4302	100%	671	345	15%	52	723	5756	76	574	871	0.105
% legal Unmarked	0.479	0.0264	999	5	9	100%	5	994	15%	149	154	2693	52	52	256	0.337
% sub-legal marked	0.027	0.0008	56					56	20%	11	11	137	12	-12	34	1.049
% sub-legal unmarked	0.007	0.0001	14					14	20%	3	3	22	5	-6	12	1.605
<b>Total</b>			<b>2,085</b>				<b>676</b>	<b>1,409</b>		<b>215</b>	<b>891</b>					

**Computation of Variance on Total Mortality**

E = Encounters

PPN Test = Proportions legal marked or legal unmarked or sub-legal marked or sub-legal unmarked from test fishery

sfm = Selective Fishery Mortality Rate

$$\text{Variance} = (1 - \text{sfm})^2 * V(\text{Ret}) + (E^2 * V(\text{TF}) + V(\text{Tot Enc}) * \text{PPN Test}^2) * \text{sfm}^2$$

- 
- a. Includes up to 194 fish that may be sublegal-size and marked Chinook based on measurements during creel surveys.
  - b. Includes up to 3 fish that may be sublegal-size and marked Chinook based on measurements during creel surveys.

The second method for estimating the number of encounters was based on the assumption that anglers kept all fish that were legal-size and marked and the number of fish in the other three categories were apportioned by weighted test boat catch rates. This method resulted in an estimate of 11,481 encounters (Table 15) compared to 17,377 encounters for the first method.

The first method produced a result that implied anglers were “sorting” their catch by releasing one-third of the fish that were legal to keep. The second method assumed that all retainable Chinook were kept. Given the relatively low catch rate of marked legal-size Chinook in this fishery (about one fish for every 8 anglers), it seems unlikely that extensive sorting was occurring. It is also unlikely that all legal-size and marked fish were kept; even in low success fisheries barely legal-size fish may be voluntarily released in hopes of landing a larger one. The true number of encounters likely lies between the two estimates of encounters (Table 16).

The range of encounters resulting from the two methods produces a corresponding range of mortalities. Using the first method and a release mortality rate of 15% for legal size and 20% for sublegal-size fish, we estimated the total mortalities of Chinook in the selective fishery at 5,870, which includes the harvest of 3,576 fish (Table 17). Based on the estimated 15,292 encounters of Chinook in Area 5, we estimated the total mortality of Chinook there at 4,979 fish, including the 2,900 harvested. Based on the estimated 2,085 encounters of Chinook in Area 6, we estimated the total mortality of Chinook there at 891 fish, including the 676 harvested. Overall, we estimated the total mortality of unmarked fish at 1,676 fish, of which 547 were sublegal-size fish and 1,129 were legal-size fish.

Using the encounters estimated by assuming anglers kept all legal fish, we estimated total mortalities at 4,910 fish, of which 1,109 were unmarked fish (Table 17). Of the unmarked fish, we estimated that 362 were sublegal-size and 747 were legal-size.

Based on the estimated number of total encounters from the creel survey (the highest number) and apportioning them based on the test boat catch rates, we estimated the 2004 fishery encountered 7,498 unmarked legal-size Chinook and 1,738 unmarked sublegal-size Chinook (Table 14). These estimates are below the predicted encounters of 7,993 unmarked legal-size Chinook and 4,935 unmarked sublegal-size Chinook as produced in the final pre-season run of the Fishery Regulation Assessment Model (FRAM), and suggests this fishery did not hinder nor jeopardize achievement of the overall conservation goals for Puget Sound Chinook.

Table 15. Estimated encounters of Chinook in the Area 5 and 6 Chinook selective fishery in 2004 based on test boat proportions. This method assumes that anglers retained all legal-size marked Chinook and then estimates the number in the remaining categories based on the ratio they were captured in the test fishing. Values may not add exactly due to rounding error.

	Area	Legal-size Marked	Legal-size Unmarked	Sublegal-size Marked	Sublegal-size Unmarked	Total
Proportion from Test Fishing	5	0.287	0.425	0.110	0.178	
	6	0.487	0.479	0.027	0.007	
Estimated Encounters	5	2,900 <sup>a</sup>	4,294	1,112	1,799	10,105
	6	671 <sup>b</sup>	659	37	10	1,377
	5 & 6 Combined	3,571	4,954	1,149	1,808	11,481

- a. Includes up to 194 fish that may be sublegal-size and marked Chinook based on measurements during creel surveys.
- b. Includes up to 3 fish that may be sublegal-size and marked Chinook based on measurements during creel surveys.

Table 16. Comparison of estimated encounters of Chinook in the Area 5 and 6 Chinook selective fishery in 2004. Test boat proportions method assumes that all legal-size marked Chinook were retained by anglers. Values may not add exactly due to rounding error.

Method	Area	Legal-size Marked Kept	Legal-size Marked Released	Legal-size Unmarked Kept	Legal-size Unmarked Released	Sublegal-size Marked Released	Sublegal-size Unmarked Released	Total Encountered
Creel and Test Boat	5	2,900 <sup>a</sup>	1,489	0	6,499	1,682	2,722	15,292
	6	671 <sup>b</sup>	345	5	994	56	14	2,085
	5 & 6 Combined	3,571	1,834	5	7,493	1,738	2,736	17,377
Test boat Proportions	5	2,900 <sup>a</sup>	0	0	4,294	1,112	1,799	10,105
	6	671 <sup>b</sup>	0	5	654	37	10	1,377
	5 & 6 Combined	3,571	0	5	4,949	1,149	1,808	11,481

- a. Includes up to 194 fish that may be sublegal-size and marked Chinook based on measurements during creel surveys.
- b. Includes up to 3 fish that may be sublegal-size and marked Chinook based on measurements during creel surveys.

Table 17. Comparison of estimated mortalities of Chinook in the Area 5 and 6 Chinook selective fishery in 2004. Test boat proportions method assumes that all legal-size marked Chinook were retained by anglers. Values may not add exactly due to rounding error.

Method	Area	Legal-size Marked Kept	Legal-size Marked Released	Legal-size Unmarked Kept	Legal-size Unmarked Released	Sublegal- size Marked Released	Sublegal- size Unmarked Released	Total Mortalities
Creel and Test Boat	5	2,900 <sup>a</sup>	223	0	975	336	544	4,979
	6	671 <sup>b</sup>	52	5	149	11	3	891
	5 & 6 Combined	3,571	275	5	1,124	348	547	5,870
Test boat Proportions	5	2,900 <sup>a</sup>	0	0	644	222	360	4,126
	6	671 <sup>b</sup>	0	5	98	7	2	783
	5 & 6 Combined	3,571	0	5	742	230	362	4,910

a. Includes up to 194 fish that may be sublegal-size and marked Chinook based on measurements during creel surveys.

b. Includes up to 3 fish that may be sublegal-size and marked Chinook based on measurements during creel surveys.

## **COMPLIANCE WITH REGULATIONS**

Compliance with existing regulations, and the new regulation prohibiting bringing unmarked salmon on board a vessel, was considered an integral part of a successful fishery. Compared with 2002, WDFW enforcement staff conducted additional patrols and emphasis patrols to monitor compliance. Between July 1 and August 8, officers contacted 219 anglers in Area 5 and 220 anglers in Area 6. From those contacts, no citations or warnings were issued for retention of unmarked Chinook, nor were any warnings or citations issued for bringing an unmarked salmon on board a vessel. Also, out of 996 Chinook sampled by creel surveyors, only two were unmarked (0.2%). From the perspective of protecting wild Chinook and ensuring proper handling during release, the high compliance rate suggests that these objectives were obtained. Although this study was not designed to obtain an unbiased estimate of compliance, these data suggest a very high level of compliance in the fishery.

## **SUMMARY**

The second year of the pilot marine Chinook selective fishery was successful with respect to the objective of increasing meaningful recreational opportunity within conservation constraints for Puget Sound Chinook. Anglers were allowed to fish for and retain Chinook for 39 days in Areas 5 and 6, compared with only 10 days and 5 days in Area 5 in 2001 and 2002, respectively. Angler effort in Area 5 was double the effort in 2002 during the same time frame. Using data from the test fishery sampling during the Chinook Selective Fishery, nearly half, or one in two, of the legal-size Chinook encountered were marked and could be retained by anglers.

The pilot fishery was also successful with respect to the objective of implementing monitoring and sampling programs to obtain management information for evaluation and planning of potential future selective Chinook fisheries. Estimated encounters were less than pre-season predictions. Anglers were able to fish for and retain Chinook 34 days more in 2004 than they did in 2002, with a lower mortality of unmarked legal-size Chinook suggesting that fishing selectively in this area has a lower impact on unmarked legal-size Chinook than fishing non-selectively. Compliance with fishing regulations was good during the fishery. The number of mortalities of unmarked double index coded wire tagged fish was negligible.

## ACKNOWLEDGEMENTS

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Appendix A. 2004 statistical weeks used by Washington Department of Fish and Wildlife.

2004 Statistical Weeks (Monday - Sunday)

Stat. Mon	Week No.	Calendar Dates		Julian Dates		Stat. Mon	Week No.	Calendar Dates		Julian Dates	
		Start	End	Start	End			Start	End		
Jan <b>1</b>	1	01-Jan	04-Jan	1	4	Jul <b>7</b>	27	28-Jun	04-Jul	180	186
	2	05-Jan	11-Jan	5	11		28	05-Jul	11-Jul	187	193
	3	12-Jan	18-Jan	12	18		29	12-Jul	18-Jul	194	200
	4	19-Jan	25-Jan	19	25		30	19-Jul	25-Jul	201	207
	5	26-Jan	01-Feb	26	32		31	26-Jul	01-Aug	208	214
Feb <b>2</b>	6	02-Feb	08-Feb	33	39	Aug <b>8</b>	32	02-Aug	08-Aug	215	221
	7	09-Feb	15-Feb	40	46		33	09-Aug	15-Aug	222	228
	8	16-Feb	22-Feb	47	53		34	16-Aug	22-Aug	229	235
	9	23-Feb	29-Feb	54	60		35	23-Aug	29-Aug	236	242
Mar <b>3</b>	10	01-Mar	07-Mar	61	67	Sep <b>9</b>	36	30-Aug	05-Sep	243	249
	11	08-Mar	14-Mar	68	74		37	06-Sep	12-Sep	250	256
	12	15-Mar	21-Mar	75	81		38	13-Sep	19-Sep	257	263
	13	22-Mar	28-Mar	82	88		39	20-Sep	26-Sep	264	270
Apr <b>4</b>	14	29-Mar	04-Apr	89	95	Oct <b>10</b>	40	27-Sep	03-Oct	271	277
	15	05-Apr	11-Apr	96	102		41	04-Oct	10-Oct	278	284
	16	12-Apr	18-Apr	103	109		42	11-Oct	17-Oct	285	291
	17	19-Apr	25-Apr	110	116		43	18-Oct	24-Oct	292	298
	18	26-Apr	02-May	117	123		44	25-Oct	31-Oct	299	305
May <b>5</b>	19	03-May	09-May	124	130	Nov <b>11</b>	45	01-Nov	07-Nov	306	312
	20	10-May	16-May	131	137		46	08-Nov	14-Nov	313	319
	21	17-May	23-May	138	144		47	15-Nov	21-Nov	320	326
	22	24-May	30-May	145	151		48	22-Nov	28-Nov	327	333
June <b>6</b>	23	31-May	06-Jun	152	158	Dec <b>12</b>	49	29-Nov	05-Dec	334	340
	24	07-Jun	13-Jun	159	165		50	06-Dec	12-Dec	341	347
	25	14-Jun	20-Jun	166	172		51	13-Dec	19-Dec	348	354
	26	21-Jun	27-Jun	173	179		52	20-Dec	26-Dec	355	361
							53	27-Dec	31-Dec	362	366

Appendix B1. Sample rates for the 2004 Area 5 and 6 Chinook Selective fisheries, July 1 – August 8, 2004.

Week	Area 5			Area 6		
	Number of Chinook Sampled	Estimated Chinook Retained	Sample Rate	Number of Chinook Sampled	Estimated Chinook Retained	Sample Rate
27	128	697	0.184	47	81	0.582
28	151	513	0.294	17	46	0.372
29	106	407	0.260	16	37	0.429
30	100	410	0.244	87	185	0.470
31	127	475	0.267	70	188	0.373
32	80	397	0.202	69	139	0.495
Total	692	2,900	0.239	306	676	0.453

Appendix C1. Weekly sampling data from creel surveys conducted during the Chinook Selective Fishery in Marine Area 5, July 1 through August 8, 2004.

Statistic	Week						Total
	27	28	29	30	31	32	
Kept Chinook Sampled	128	151	106	100	127	80	692
Kept Chinook Marked	128	151	106	100	127	80	692
Released Chinook	531	688	543	458	529	274	3,023
Released Chinook Unmarked	458	638	465	408	457	247	2,673
Released Chinook Marked	33	33	62	30	20	10	188
Released Chinook Unknown Mark Status	40	17	16	20	52	17	162
Mark Rate (%)	26.0	22.4	26.5	24.2	24.3	26.7	24.8
Proportion of Catch <sup>1</sup>	0.24	0.18	0.14	0.14	0.16	0.14	
Weighted Mark Rate (%)	6.25	3.96	3.73	3.42	3.99	3.65	25.00
Variance							2

1. The weekly estimated harvest of Chinook divided by the estimated season total Chinook harvest (see Appendix D).

Appendix C2. Weekly sampling data from creel surveys conducted during the Chinook Selective Fishery in Marine Area 6, July 1 through August 8, 2004.

Statistic	Week						Total
	27	28	29	30	31	32	
Kept Chinook Sampled	47	17	16	87	70	69	306
Kept Chinook Marked	47	17	16	86	69	69	304
Released Chinook	83	53	36	180	137	169	658
Released Chinook Unmarked	73	53	35	169	136	160	626
Released Chinook Marked	2	0	0	6	1	4	13
Released Chinook Unknown Mark Status	8	0	1	5	0	5	19
Mark Rate (%)	40.2	24.3	31.4	35.1	33.8	31.3	33.5
Percent of Catch <sup>1</sup>	0.12	0.07	0.06	0.27	0.28	0.21	
Weighted Mark Rate (%)	4.80	1.64	1.73	9.61	9.39	6.46	33.64
Variance							13

1. The weekly estimated harvest of Chinook divided by the estimated season total Chinook harvest (see Appendix E).

Appendix D. Weekly creel survey estimates of marked and unmarked Chinook catch and variances (in parentheses) during the Chinook Selective Fishery in Marine Area 5, July 1 through August 8, 2004. Values may not add exactly due to rounding error.

Statistical Week	Chinook Kept			Chinook Released			
	Marked	Unmarked	Total	Marked	Unmarked	Unknown	Total
27	697 (26,847)	0 (0)	697 (26,847)	185 (8,404)	2,590 (244,208)	210 (17,279)	2,985 (270,149)
28	513 (2,875)	0 (0)	513 (2,875)	114 (528)	2,116 (102,257)	54 (416)	2,284 (103,048)
29	407 (3,895)	0 (0)	407 (3,895)	222 (5,482)	1,701 (34,026)	72 (351)	1,995 (39,863)
30	410 (2,556)	0 (0)	410 (2,556)	137 (2,766)	1,545 (43,432)	78 (830)	1,760 (47,030)
31	475 (3,867)	0 (0)	475 (3,867)	100 (835)	1,596 (156,980)	276 (11,509)	1,972 (169,325)
32	397 (11,543)	0 (0)	397 (11,543)	47 (88)	1,289 (148,009)	61 (636)	1,397 (148,734)
<b>Total</b>	<b>2,900</b> (51,584)	<b>0</b> (0)	<b>2,900</b> (51,584)	<b>806</b> (18,105)	<b>10,836</b> (728,746)	<b>750</b> (31,297)	<b>12,392</b> (778,148)

Appendix E. Weekly creel survey estimates of marked and unmarked Chinook catch and variances (in parentheses) during the Chinook Selective Fishery in Marine Area 6, July 1 through August 8, 2004. Values may not add exactly due to rounding error.

Statistical Week	Chinook Kept			Chinook Released			Total
	Marked	Unmarked	Total	Marked	Unmarked	Unknown	
27	81 (242)	0 (0)	81 (242)	3 (0)	119 (1,096)	18 (66)	141 (1,162)
28	46 (240)	0 (0)	46 (240)	0 (0)	142 (236)	0 (0)	142 (236)
29	37 (137)	0 (0)	37 (137)	0 (0)	93 (989)	1 (0)	94 (990)
30	184 (1,177)	1 (0)	185 (1,177)	11 (20)	337 (4,659)	7 (4)	355 (4,683)
31	184 (2,132)	3 (9)	188 (2,141)	4 (9)	343 (6,623)	0 (0)	347 (6,632)
32	139 (372)	0 (0)	139 (372)	5 (6)	303 (2,635)	23 (287)	331 (2,928)
<b>Total</b>	<b>671</b> <b>(4,301)</b>	<b>5</b> <b>(9)</b>	<b>676</b> <b>(4,310)</b>	<b>23</b> <b>(35)</b>	<b>1,337</b> <b>(16,238)</b>	<b>50</b> <b>(358)</b>	<b>1,409</b> <b>(16,631)</b>

Appendix F. Recoveries of coded wire tags from Chinook salmon during the Chinook Selective Fisheries in Marine Areas 5 and 6, July 1 through August 8, 2004.

Area	RecovDate	Tagcode	RcvMark	FKLcm	BroodYr	RearingHatchery	ReleaseSite	ReleaseAgency
05	Jul 11 2004	050780	AD Fin Clp	76	2001	SPRING CR NFH	SPRING CR 29.0159	FWS
05	Jul 17 2004	050780	AD Fin Clp	91	2001	SPRING CR NFH	SPRING CR 29.0159	FWS
05	Jul 24 2004	050780	AD Fin Clp	66	2001	SPRING CR NFH	SPRING CR 29.0159	FWS
05	Aug 1 2004	050784	AD Fin Clp	70	2001	MAKAH NFH ON SOOES R	SOOES R 20.0015	FWS
05	Jul 25 2004	062761	AD Fin Clp	43	2002	FEATHER R HATCHERY	BENICIA	CDWR
05	Jul 29 2004	065288	AD Fin Clp	55	2001	TRINITY R HATCHERY	TRINITY R HATCHERY	HVT
06	Jul 25 2004	093452	AD Fin Clp	76	2001	BIG CR HATCHERY	BIG CR (LWR COL R)	ODFW
05	Jul 11 2004	093628	AD Fin Clp	55	2001	BONNEVILLE HATCHERY	UMATILLA R	ODFW
05	Jul 21 2004	184448	AD Fin Clp	76	2001	H-COWICHAN R	R-COWICHAN BAY	CDFO
06	Jul 23 2004	184645	AD Fin Clp	70	2001	H-COWICHAN R	R-COWICHAN R	CDFO
05	Jul 4 2004	184706	AD Fin Clp	74	2001	H-SHUSWAP R	R-SHUSWAP R MID	CDFO
05	Jul 2 2004	184909	AD Fin Clp	69	2001	H-INCH CR	R-STAVE R	CDFO
05	Jul 6 2004	184909	AD Fin Clp	65	2001	H-INCH CR	R-STAVE R	CDFO
05	Jul 25 2004	184909	AD Fin Clp	74	2001	H-INCH CR	R-STAVE R	CDFO
05	Jul 24 2004	184914	AD Fin Clp	64	2001	H-CHILLIWACK R	R-CHILLIWACK R	CDFO
05	Jul 5 2004	184916	AD Fin Clp	63	2001	H-CHILLIWACK R	R-CHILLIWACK R	CDFO
05	Jul 6 2004	184916	AD Fin Clp	61	2001	H-CHILLIWACK R	R-CHILLIWACK R	CDFO
05	Jul 25 2004	184916	AD Fin Clp	76	2001	H-CHILLIWACK R	R-CHILLIWACK R	CDFO
05	Aug 1 2004	184921	AD Fin Clp	52	2002	H-CHEHALIS R	R-CHEHALIS R	CDFO
05	Jul 17 2004	185533	AD Fin Clp	48	2002	H-CHILLIWACK R	R-CHILLIWACK R	CDFO
05	Jul 2 2004	210279	AD Fin Clp	71	2000	GROVERS CR HATCHERY	GROVERS CR HATCHERY	SUQ
05	Jul 10 2004	210279	AD Fin Clp	75	2000	GROVERS CR HATCHERY	GROVERS CR HATCHERY	SUQ
05	Jul 14 2004	210279	AD Fin Clp	61	2000	GROVERS CR HATCHERY	GROVERS CR HATCHERY	SUQ
06	Jul 17 2004	210279	AD Fin Clp	61	2000	GROVERS CR HATCHERY	GROVERS CR HATCHERY	SUQ
06	Jul 24 2004	210279	AD Fin Clp	83	2000	GROVERS CR HATCHERY	GROVERS CR HATCHERY	SUQ
05	Jul 4 2004	210293	AD Fin Clp	67	2000	PUYALLUP TRIBAL HATC	COWSKULL ACCLIM POND	PUYA
05	Jul 17 2004	210294	AD Fin Clp	74	2000	PUYALLUP TRIBAL HATC	DIRU CR 10.0029	PUYA
06	Jul 29 2004	210294	AD Fin Clp	89	2000	PUYALLUP TRIBAL HATC	DIRU CR 10.0029	PUYA
05	Jul 16 2004	210324	AD Fin Clp	53	2001	BERNIE GOBIN HATCH	TULALIP CR 07.0001	TULA
05	Jul 10 2004	210343	AD Fin Clp	60	2001	COWSKL & RUSHWTR PDS	COWSKL & RUSHWTR PDS	PUYA
05	Jul 17 2004	210343	AD Fin Clp	65	2001	COWSKL & RUSHWTR PDS	COWSKL & RUSHWTR PDS	PUYA
06	Jul 24 2004	210343	AD Fin Clp	72	2001	COWSKL & RUSHWTR PDS	COWSKL & RUSHWTR PDS	PUYA
06	Jul 29 2004	210343	AD Fin Clp	60	2001	COWSKL & RUSHWTR PDS	COWSKL & RUSHWTR PDS	PUYA
05	Jul 25 2004	210344	AD Fin Clp	60	2001	PUYALLUP TRIBAL HATC	DIRU CR 10.0029	PUYA
05	Aug 1 2004	210390	AD Fin Clp	57	2001	GROVERS CR HATCHERY	GROVERS CR HATCHERY	SUQ
05	Aug 1 2004	210390	AD Fin Clp	59	2001	GROVERS CR HATCHERY	GROVERS CR HATCHERY	SUQ
05	Jul 17 2004	210391	AD Fin Clp	65	2001	MARBLEMOUNT HATCHERY	SKAGIT R 03.0176	WDFW
05	Jul 2 2004	210392	AD Fin Clp	56	2001	KALAMA CR HATCHERY	KALAMA CR 11.0017	NISQ
05	Jul 9 2004	212950	AD Fin Clp	75	2000	MARBLEMOUNT HATCHERY	RED CR 03.1325	WDFW
05	Jul 10 2004	212951	AD Fin Clp	95	1999	HOKO FALLS HATCHERY	HOKO R 19.0148	MAKA
05	Jul 4 2004	630183	AD Fin Clp	59	2000	LYONS FERRY HATCHERY	CAPTAIN JOHNS PD	NEZP
06	Jul 3 2004	630189	AD Fin Clp	75	2000	NISQUALLY HATCHERY	CLEAR CR 11.0013C	NISQ
05	Jul 18 2004	630282	AD Fin Clp	88	2000	PORTAGE BAY HATCHERY	PORTAGE BAY/SHIP CNL	UW
05	Jul 10 2004	630398	AD Fin Clp	66	2000	PORTAGE BAY HATCHERY	PORTAGE BAY/SHIP CNL	UW
06	Jul 16 2004	630398	AD Fin Clp	79	2000	PORTAGE BAY HATCHERY	PORTAGE BAY/SHIP CNL	UW
05	Jul 24 2004	630398	AD Fin Clp	80	2000	PORTAGE BAY HATCHERY	PORTAGE BAY/SHIP CNL	UW
05	Jul 31 2004	630398	AD Fin Clp	76	2000	PORTAGE BAY HATCHERY	PORTAGE BAY/SHIP CNL	UW
05	Jul 1 2004	630668	AD Fin Clp	80	2000	WALLACE R HATCHERY	WALLACE R 07.0940	WDFW
06	Jul 3 2004	630669	AD Fin Clp	79	2000	SOOS CREEK HATCHERY	BIG SOOS CR 09.0072	WDFW
05	Jul 14 2004	630669	AD Fin Clp	78	2000	SOOS CREEK HATCHERY	BIG SOOS CR 09.0072	WDFW
06	Jul 21 2004	630669	AD Fin Clp	65	2000	SOOS CREEK HATCHERY	BIG SOOS CR 09.0072	WDFW
05	Aug 1 2004	630678	AD Fin Clp	57	2000	LYONS FERRY HATCHERY	SNAKE R @PITTSBURG L	NEZP
05	Jul 23 2004	630678	AD Fin Clp	53	2000	LYONS FERRY HATCHERY	SNAKE R @PITTSBURG L	NEZP
05	Jul 31 2004	630678	AD Fin Clp	63	2000	LYONS FERRY HATCHERY	SNAKE R @PITTSBURG L	NEZP
06	Jul 23 2004	630683	AD Fin Clp	75	2000	GEORGE ADAMS HATCHRY	PURDY CR 16.0005	WDFW
06	Jul 14 2004	630684	AD Fin Clp	86	2000	GEORGE ADAMS HATCHRY	PURDY CR 16.0005	WDFW
06	Jul 29 2004	630684	AD Fin Clp	81	2000	GEORGE ADAMS HATCHRY	PURDY CR 16.0005	WDFW
05	Jul 10 2004	630687	AD Fin Clp	80	2000	NISQUALLY HATCHERY	CLEAR CR 11.0013C	NISQ
06	Jul 23 2004	630687	AD Fin Clp	65	2000	NISQUALLY HATCHERY	CLEAR CR 11.0013C	NISQ
06	Jul 27 2004	630694	AD Fin Clp	76	2000	MARBLEMOUNT HATCHERY	CASCADE R 03.1411	WDFW
05	Jul 1 2004	630783	AD Fin Clp	68	2000	MCALLISTER HATCHERY	MCALLISTER CR11.0324	WDFW
05	Jul 25 2004	630794	AD Fin Clp	68	2000	COWLITZ SALMON HATCH	COWLITZ R 26.0002	WDFW
06	Jul 25 2004	630883	AD Fin Clp	75	2000	TUMWATER FALLS HATCH	CAPITOL LK (13)	WDFW
05	Jul 29 2004	630883	AD Fin Clp	83	2000	TUMWATER FALLS HATCH	CAPITOL LK (13)	WDFW
05	Aug 1 2004	630889	AD Fin Clp	51	2001	TURTLE ROCK HATCHERY	COL.R. @ TURTLE ROCK	WDFW
05	Jul 16 2004	630889	AD Fin Clp	65	2001	TURTLE ROCK HATCHERY	COL.R. @ TURTLE ROCK	WDFW
05	Jul 18 2004	630889	AD Fin Clp	55	2001	TURTLE ROCK HATCHERY	COL.R. @ TURTLE ROCK	WDFW
05	Jul 30 2004	630889	AD Fin Clp	60	2001	TURTLE ROCK HATCHERY	COL.R. @ TURTLE ROCK	WDFW
05	Jul 9 2004	630891	AD Fin Clp	54	2001	TURTLE ROCK HATCHERY	COL.R. @ TURTLE ROCK	WDFW
05	Jul 16 2004	630891	AD Fin Clp	58	2001	TURTLE ROCK HATCHERY	COL.R. @ TURTLE ROCK	WDFW
05	Jul 17 2004	630891	AD Fin Clp	53	2001	TURTLE ROCK HATCHERY	COL.R. @ TURTLE ROCK	WDFW
05	Jul 25 2004	630891	AD Fin Clp	51	2001	TURTLE ROCK HATCHERY	COL.R. @ TURTLE ROCK	WDFW
05	Jul 25 2004	630891	AD Fin Clp	45	2001	TURTLE ROCK HATCHERY	COL.R. @ TURTLE ROCK	WDFW
06	Jul 31 2004	630896	AD Fin Clp	71	2001	MARBLEMOUNT HATCHERY	CASCADE CR 03.2584	WDFW

## Appendix F. Continued.

Area	RecovDate	Tagcode	RcvMark	FKLcm	BroodYr	RearingHatchery	ReleaseSite	ReleaseAgency
05	Jul 6 2004	630996	AD Fin Clp	66	2000	SIMILKAMEEN HATCHERY	SIMILKAMEEN R 490325	WDFW
05	Jul 10 2004	631273	AD Fin Clp	66	2000	LYONS FERRY HATCHERY	SNAKE R-LOWR 33.0002	WDFW
05	Jul 11 2004	631273	AD Fin Clp	64	2000	LYONS FERRY HATCHERY	SNAKE R-LOWR 33.0002	WDFW
05	Jul 17 2004	631273	AD Fin Clp	67	2000	LYONS FERRY HATCHERY	SNAKE R-LOWR 33.0002	WDFW
05	Jul 30 2004	631273	AD Fin Clp	61	2000	LYONS FERRY HATCHERY	SNAKE R-LOWR 33.0002	WDFW
05	Jul 30 2004	631294	AD Fin Clp	63	2001	COWLITZ SALMON HATCH	COWLITZ R 26.0002	WDFW
05	Jul 21 2004	631379	AD Fin Clp	64	2001	COWLITZ SALMON HATCH	COWLITZ R 26.0002	WDFW
05	Jul 25 2004	631382	AD Fin Clp	58	2001	PRIEST RAPIDS HATCHE	COLUMBIA R AT PRIEST	WDFW
05	Jul 17 2004	631469	AD Fin Clp	56	2001	COWLITZ SALMON HATCH	COWLITZ SALMON HATCH	WDFW
05	Jul 24 2004	631548	AD Fin Clp	60			Unknown release data	
05	Jul 30 2004	631549	AD Fin Clp	54	2001	WELLS HATCHERY	COLUMBIA NEAR WELLS	WDFW
05	Jul 31 2004	631549	AD Fin Clp	62	2001	WELLS HATCHERY	COLUMBIA NEAR WELLS	WDFW
05	Jul 31 2004	631549	AD Fin Clp	55	2001	WELLS HATCHERY	COLUMBIA NEAR WELLS	WDFW
05	Aug 1 2004	631585	AD Fin Clp	53	2001	LYONS FERRY HATCHERY	SNAKE R-LOWR 33.0002	WDFW
05	Jul 5 2004	631585	AD Fin Clp	49	2001	LYONS FERRY HATCHERY	SNAKE R-LOWR 33.0002	WDFW
05	Jul 6 2004	631585	AD Fin Clp	52	2001	LYONS FERRY HATCHERY	SNAKE R-LOWR 33.0002	WDFW
05	Jul 11 2004	631585	AD Fin Clp	60	2001	LYONS FERRY HATCHERY	SNAKE R-LOWR 33.0002	WDFW
05	Jul 15 2004	631585	AD Fin Clp	56	2001	LYONS FERRY HATCHERY	SNAKE R-LOWR 33.0002	WDFW
05	Jul 17 2004	631585	AD Fin Clp	55	2001	LYONS FERRY HATCHERY	SNAKE R-LOWR 33.0002	WDFW
05	Jul 18 2004	631585	AD Fin Clp	50	2001	LYONS FERRY HATCHERY	SNAKE R-LOWR 33.0002	WDFW
05	Jul 21 2004	631585	AD Fin Clp	57	2001	LYONS FERRY HATCHERY	SNAKE R-LOWR 33.0002	WDFW
05	Jul 21 2004	631585	AD Fin Clp	53	2001	LYONS FERRY HATCHERY	SNAKE R-LOWR 33.0002	WDFW
05	Jul 29 2004	631585	AD Fin Clp	56	2001	LYONS FERRY HATCHERY	SNAKE R-LOWR 33.0002	WDFW
05	Jul 29 2004	631585	AD Fin Clp	53	2001	LYONS FERRY HATCHERY	SNAKE R-LOWR 33.0002	WDFW
05	Jul 18 2004	631587	AD Fin Clp	47	2001	DRYDEN POND	WENATCHEE R 45.0030	WDFW
05	Jul 27 2004	631587	AD Fin Clp	56	2001	DRYDEN POND	WENATCHEE R 45.0030	WDFW
05	Jul 29 2004	631780	AD Fin Clp	47	2002	VOIGHTS CR HATCHERY	VOIGHT CR 10.0414	WDFW
06	Jul 3 2004	636322	AD Fin Clp	65	2001	GEORGE ADAMS HATCHRY	PURDY CR 16.0005	WDFW
05	Jul 4 2004	636322	AD Fin Clp	63	2001	GEORGE ADAMS HATCHRY	PURDY CR 16.0005	WDFW
05	Jul 10 2004	636322	AD Fin Clp	61	2001	GEORGE ADAMS HATCHRY	PURDY CR 16.0005	WDFW
05	Jul 17 2004	636322	AD Fin Clp	69	2001	GEORGE ADAMS HATCHRY	PURDY CR 16.0005	WDFW
05	Jul 20 2004	636322	AD Fin Clp	56	2001	GEORGE ADAMS HATCHRY	PURDY CR 16.0005	WDFW
05	Jul 25 2004	636322	AD Fin Clp	45	2001	GEORGE ADAMS HATCHRY	PURDY CR 16.0005	WDFW